



# West Virginia Purchasing Division

2019 Washington Street, East  
Charleston, WV 25305  
Telephone: 304-558-2306  
General Fax: 304-558-6026  
Bid Fax: 304-558-3970

The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

## Header

[List View](#)**General Information**[Contact](#)[Default Values](#)[Discount](#)[Document Information](#)

Procurement Folder: 27531

SO Doc Code: CEOI

Procurement Type: Central Contract - Fixed Amt

SO Dept: 0313

Vendor ID:  

SO Doc ID: DEP1500000004

Legal Name: MICHAEL BAKER JR INC

Published Date: 10/22/14

Alias/DBA:

Close Date: 11/5/14

Total Bid: \$0.00

Close Time: 13:30

Response Date:  

Status: Closed

Response Time: Solicitation Description:    


Total of Header Attachments: 0

Total of All Attachments: 0



Purchasing Division  
 2019 Washinton Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

**State Of West Virginia  
 Solicitation Response**

**Proc Folder :** 27531

**Solicitation Description :** Addendum No. 1 EOI Viking UO-519/Rockville/ Preston Energy

**Proc Type :** Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2014-11-05 13:30:00	SR 0313 ESR11031400000000834	1

**VENDOR**

000000160331  
 MICHAEL BAKER JR INC

**FOR INFORMATION CONTACT THE BUYER**

Jamie Adkins  
 (304) 926-0499  
 jamie.h.adkins@wv.gov

**Signature X**

**FEIN #**

**DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	EOI Mapping and Engineering Design Services				\$448,133.30

Comm Code	Manufacturer	Specification	Model #
81100000			

**Extended Description :** Mapping of mine permit areas, property owner boundaries, and engineering design services to assist OSR in completing land reclamation and water treatment by compiling a Request for Quotation (RFQ) for the project, per the attached specification and requirements.

# Expression of Interest for Professional Mapping and Design Services at the Bond Forfeited Permits of the Viking Coal Company UO-519, Rockville Mining Co. S-91-85, Preston Energy Inc. UO-235 in Preston County, West Virginia (CEOI 0313 DEP1500000004)



Submitted to:  
State of West Virginia  
Department of Administration  
Purchasing Division  
Charleston, West Virginia



Submitted by:  
Michael Baker Jr., Inc.  
A Michael Baker International Company  
Beaver, PA 15009  
November 5, 2014



November 5, 2014

Mr. Greg Clay  
State of West Virginia Department of Administration  
Purchasing Division  
2019 Washington Street, East  
Charleston, West Virginia 25305-0103

**Re: Expression of Interest (EOI) for Professional Mapping and Design Services at the Bond Forfeited Permits of the Viking Coal Company UO-519, Rockville Mining Company S-91-85 and Preston Energy Inc. UO-235 | RFQ Number: DEP17034 (CEOI 0313 DEP1500000004)**

Dear Mr. Greg Clay:

Michael Baker Jr., Inc. (Baker), a Michael Baker International company, is pleased to present our response to your EOI related to the mapping and design services for the above referenced project in Preston County. Baker is honored to have built a 30-year relationship with the West Virginia Department of Environmental Protection (WVDEP), helping to solve complex mining and environmental challenges. Since 1983, we have worked together on more than 40 projects, and **have successfully received local and national recognition for our efforts.** At Baker, we don't take the past for granted, but rather, look forward to opportunities to enhance the services we offer to the WVDEP. Although we have not worked directly for the Office of Special Reclamation, we have assembled a team of experienced personnel who have performed on previous similar assignments. Our proposed team members have also provided similar services for numerous mine reclamation and related projects over the years for a variety of clients as reflected in the enclosed documentation.

**We are proud that our team is led by Mr. Charles D. Stover, with responsibility for providing technical assistance and guidance for all reclamation projects.** Mr. Stover is the former Acting Chief and Design Administrator for the WVDEP AML/AMD Program, and most recently, the Reclamation Specialist Supervisor for the Charleston Regional Office of the WVDEP Office of Special Reclamation. This long-standing history and specific experience in mine reclamation and understanding of the Office of Special Reclamation Mission will prove to be invaluable to the project and the team. Mr. Stover's presence will help Baker be better prepared to address the remediation issues and contribute to more efficient and cost-effective solutions.

Baker's staff is experienced with all aspects of mine reclamation projects. We have provided similar services to the WVDEP, as well as the Pennsylvania DEP, the Ohio DNR, and the U.S. Office of Surface Mining to name a few. We feel that our combination of regional experience, familiarity with the site, close proximity, and Mr. Stover's specific knowledge and expertise is unique to Baker, and we are confident we can provide efficient, timely, personal, cost effective, and quality solutions for the WVDEP on this assignment.

We look forward to a favorable review of our qualifications and the opportunity to personally present our proposed project approach. Should you have any questions or require additional information, please feel free to contact me at (724) 495-4225 [wneider@mbakerintl.com](mailto:wneider@mbakerintl.com); or Mr. Stover at (304) 769-0821 [Charles.stover@mbakerintl.com](mailto:Charles.stover@mbakerintl.com).

Very truly yours,

**Michael Baker Jr., Inc.**



William D. Neider, P.E.  
Project Manager



## Required Forms

- Solicitation Form
- Affidavit
- Certification and Signature Page
- Addendum Acknowledgement



Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

State of West Virginia  
 Centralized Expression of Interest  
 02 – Architect/Engr

Proc Folder: 27531

Doc Description: EOI Viking UO-519/Rockville S-91-85 & Preston Energy UO-235

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2014-10-06	2014-11-05 13:30:00	CEOI 0313 DEP1500000004	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

Vendor Name, Address and Telephone Number:

Michael Baker Jr., Inc.  
 4301 Dutch Ridge Road  
 Beaver, Pennsylvania 15009  
 724.495.7711

**FOR INFORMATION CONTACT THE BUYER**

Robert Kilpatrick  
 (304) 558-0067  
 robert.p.kilpatrick@wv.gov

Signature X

FEIN # 25-1228638

DATE 10-31-14

All offers subject to all terms and conditions contained in this solicitation

STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**MANDATE:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: Michael Baker Jr., Inc.

Authorized Signature: *CRD* Date: 10-31-14

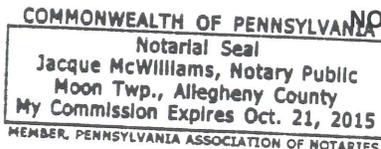
State of Pennsylvania

County of Allegheny, to-wit:

Taken, subscribed, and sworn to before me this 31 day of October, 2014.

My Commission expires Oct. 21, 2015.

**AFFIX SEAL HERE**



**NOTARY PUBLIC**

*Jacquie McWilliams*  
Purchasing Affidavit (Revised 07/01/2012)

**CERTIFICATION AND SIGNATURE PAGE**

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Michael Baker Jr., Inc.  
\_\_\_\_\_  
(Company)

 Chad R. Davis, P.E., Assistant Vice President  
\_\_\_\_\_  
(Authorized Signature) (Representative Name, Title)

P:412-375-3077 F:412-375-3997 10/31/14  
\_\_\_\_\_  
(Phone Number) (Fax Number) (Date)

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: DEP150000004**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

(Check the box next to each addendum received)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Michael Baker Jr., Inc.

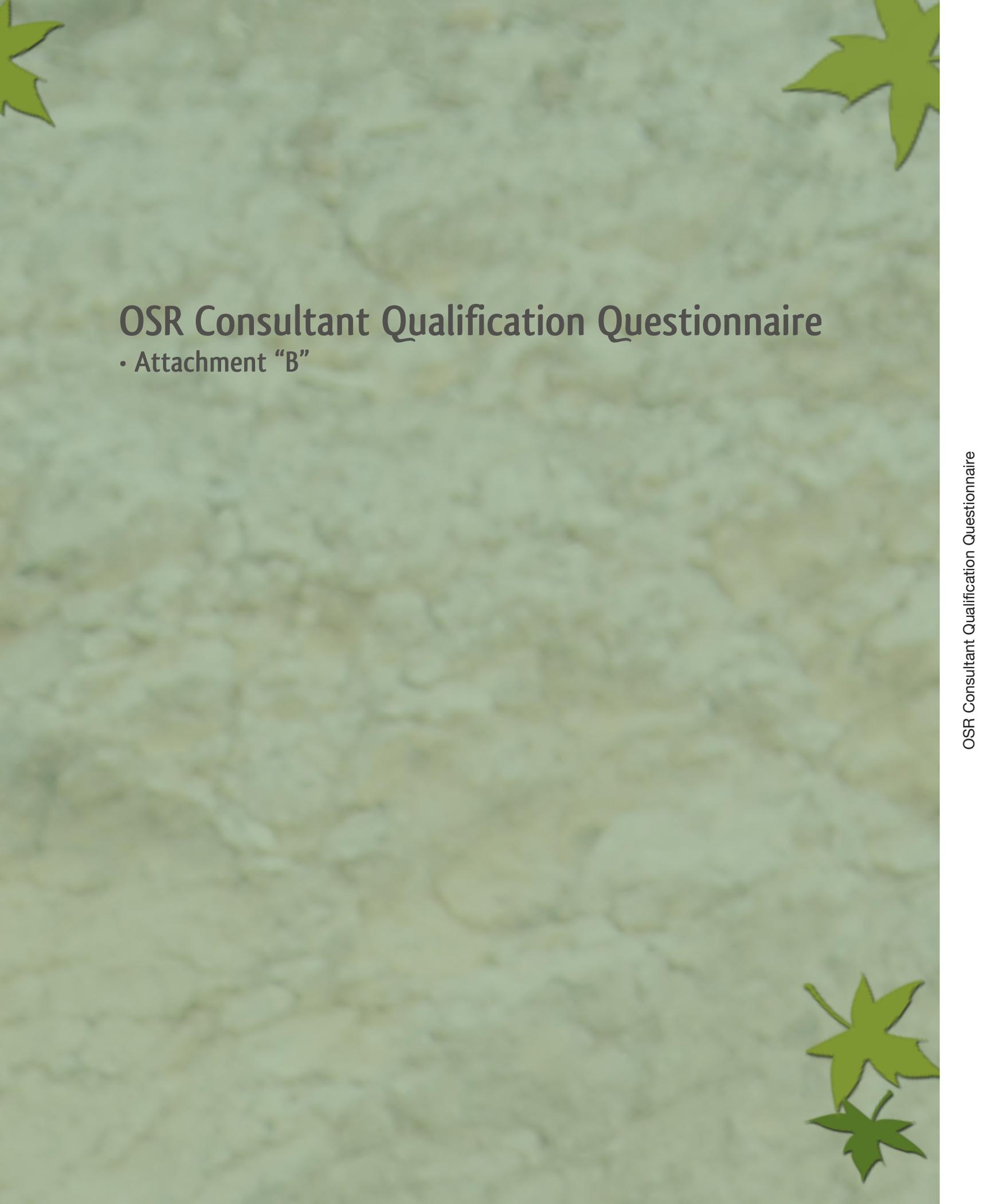
\_\_\_\_\_  
Company

  
\_\_\_\_\_  
Authorized Signature

10-31-14  
\_\_\_\_\_  
Date

**NOTE:** This addendum acknowledgment should be submitted with the bid to expedite document processing.

Revised 6/8/2012

The page features a light green, textured background with faint, repeating patterns of leaves and branches. In the corners, there are stylized green maple leaves. The text is centered in the upper half of the page.

# OSR Consultant Qualification Questionnaire

• Attachment “B”

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OSR CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

<b>PROJECT NAME</b> Professional Mapping and Design Services at the Bond Forfeited Permits of the Viking Coal Company UO-519, Rockville Mining Co. S-91-85, Preston Energy Inc. UO-235 in Preston County, WV DEP17034 (CEOI0313 DEP1500000004)	<b>DATE (DAY, MONTH, YEAR)</b>  November 5, 2014	<b>FEIN</b>  25-1228638
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<b>1. FIRM NAME</b> Michael Baker Jr., Inc.	<b>2. HOME OFFICE BUSINESS ADDRESS</b> 4301 Dutch Ridge Road Beaver, Pennsylvania 15009	<b>3. FORMER FIRM NAME</b>
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<b>4. HOME OFFICE TELEPHONE</b>  724.495.7711	<b>5. ESTABLISHED (YEAR)</b>  1940	<b>6. TYPE OWNERSHIP</b> Individual Partnership <u>Corporation</u> Joint-Venture	<b>6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)</b>  YES <u>NO</u>
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**7. PRIMARY OSR DESIGN OFFICE: ADDRESS / TELEPHONE / PERSON IN CHARGE / NO. OSR DESIGN PERSONNEL EACH OFFICE**  
Michael Baker Jr., Inc. / 4301 Dutch Ridge Road, Beaver, PA 15009 / 724.495.4079 / Christopher A. Ruppen, PG / 25  
Russell E. (Rusty) Hall, PE, PS / 7 (Charleston, WV)

<b>8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM</b>  Chad R. Davis, PE, Assistant Vice President – 412.375.3077	<b>8a. NAME, TITLE, &amp; TELEPHONE NUMBER - OTHER PRINCIPALS</b>  Russell E. (Rusty) Hall, PE, PS, Assistant Vice President – 304.769.0821
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**9. PERSONNEL BY DISCIPLINE (Bold Lettering Indicates Minimum Design Team Members)**

<u>181</u> ADMINISTRATIVE	<u>1</u> ECOLOGISTS	<u>2</u> LANDSCAPE ARCHITECTS	<u>31</u> STRUCTURAL ENGINEERS
<u>9</u> ARCHITECTS	<u>0</u> ECONOMISTS	<u>5</u> MECHANICAL ENGINEERS	<u>19</u> <b>SURVEYORS/Technicians</b>
<u>2</u> <b>BIOLOGISTS</b>	<u>3</u> ELECTRICAL ENGINEERS	<u>0</u> <b>MINING ENGINEERS</b>	<u>0</u> TRAFFIC ENGINEERS
<u>25</u> <b>CADD OPERATORS/DESIGNERS</b>	<u>25</u> ENVIRONMENTALISTS	<u>0</u> PHOTOGRAMMETRISTS	<u>46</u> ENGINEERING TECHNICIANS
<u>0</u> CHEMICAL ENGINEERS	<u>0</u> ESTIMATORS	<u>4</u> PLANNERS: URBAN/REGIONAL	<u>25</u> PROJECT MANAGERS
<u>44</u> <b>CIVIL ENGINEERS</b>	<u>17</u> <b>GEOLOGISTS</b>	<u>0</u> SANITARY ENGINEERS	<u>36</u> GIS SPECIALISTS
<u>62</u> CONSTRUCTION INSPECTORS / Mgrs.	<u>3</u> HISTORIANS	<u>0</u> SOILS ENGINEERS	<u>83</u> OTHER
<u>17</u> DESIGNERS	<u>0</u> HYDROLOGISTS	<u>0</u> SPECIFICATION WRITERS	
<u>3</u> DRAFTSMEN			<u>643</u> TOTAL PERSONNEL (Beaver and Moon Township, PA and Charleston, WV Offices)

**TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 26**

\* RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.

<b>10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE?</b>	<u>  </u> YES <u>  </u> NO <b>N/A</b>
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**11. OUTSIDE KEY CONSULTANTS / SUB-CONSULTANTS ANTICIPATED TO BE USED.** Attach "OSR Consultant Confidential Qualification

<b>NAME AND ADDRESS:</b> NGE, LLC 171 Montour Run Road Coraopolis, PA 15108	<b>SPECIALTY:</b> Drilling, Geotechnical Exploration, and Monitoring	<b>WORKED WITH BEFORE</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b> Bio-Chem Testing, Inc. 5 Weatherridge Drive Hurricane, WV 25526	<b>SPECIALTY:</b> Water Testing	<b>WORKED WITH BEFORE</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No

## 12. RELEVANT EXPERIENCE.

### A. Is your firm experienced in Acid Mine Drainage water treatment and remediation?

**YES**

#### Description and Number of Projects:

Baker's design experience includes both active and passive treatment systems, which is based on the characterization of the AMD site as well as the flows and chemistry of the AMD. To this end, Baker provides AMD sampling to determine chemical parameters as well as the flow measurements covering high- and low-flow periods that are most important in developing AMD abatement system. To date, Baker has evaluated and designed 14 AMD abatement systems, three of which are passive treatment systems while the other 11 are active treatment facilities that have been constructed and are currently in service. A few examples are listed as follows:

**Kempton Refuse and Acid Mine Drainage/Abandoned Mine Lands, Tucker County, West Virginia**, West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands, Baker designed conveyance pipes and limestone lined conveyance channels to transfer AMD to a treatment system consisting of an equalization pond, successive alkalinity producing system (SAPS pond), and aerobic wetland. The project was constructed in 2009.

**Lancashire Acid Mine Drainage Treatment Plant Design, Permitting and Construction Phase Services, Ebensburg, PA**, Pennsylvania Department of Environmental Protection, Baker directed a multi-disciplinary team of engineers in the design and permitting of an 11 MGD acid mine drainage treatment plant; and subsequently provided construction phase services through commissioning. The treatment plant was successfully commissioned in 2011.

**Condition Assessment and Operational Audit – Dumans Mine Water Treatment Plant, Barr Township, PA**, Pennsylvania Department of Environmental Protection, Baker directed activities of a multi-disciplinary engineering team investigating avenues to reduce acid mine water treatment costs and improve operations at the pumping station, treatment plant, and sludge lagoons (9.4 MGD). Work involved review of records; numerous field measurements, bench-scale treatability studies; consultation with the electric company, cost estimating; and preparation of a report summarizing findings and recommendations. The team was charged with finding avenues to materially reduce the annual operation and maintenance cost of this facility while maintaining compliance with applicable effluent limitations.

Additionally, Baker has designed seven AMD remediation projects for the WVDEP alone that included open limestone channel (OLC), anaerobic and aerobic wetlands and settling ponds, limestone sand dumping in the stream, and alkaline leach bed/anoxic limestone drains. Other Baker AMD abatement designs have been designed for USACE's Baltimore and Nashville Districts, as well as the Pennsylvania Department of Environmental Protection.

NO

### B. Is your firm experienced in soil analysis and coal refuse analysis?

**YES**

#### Description and Number of Projects:

Baker has conducted in-house soil analysis for over 60 years. We take pride in our work which starts with a geologic literature review to identify and review available references which characterize the site soils and other factors influencing the development and condition of the soils. The task is followed by a geotechnical reconnaissance which is essentially a site view by a Baker geologist or geotechnical engineer to characterize the site soil conditions. Lastly and as appropriate, a subsurface investigation is conducted to collect and identify site soils and assign appropriate engineering descriptions which, in turn, are utilized for soil analysis.

**12. RELEVANT EXPERIENCE.**

In designing special reclamation projects, generally three types of soil analysis are needed. These analyses may include: a) geotechnical analysis/soil classification, b) soil analysis for revegetation potential (pH, Acid Base Accounting, Nutrients) and c) soil analysis for hazardous materials. Baker is involved in selecting and collecting the soil samples and analyzing the results of laboratory testing as required for design. Laboratory testing is performed by a subcontractor. Of the thirty (30) most recent AML projects, Baker was involved in soil analysis for 20 projects. Baker has also prepared reprocessing potential evaluations of coal refuse sites (10 projects) which required evaluation of mine refuse based on laboratory test results. Refuse testing for these projects included refuse float/sink and proximate analysis, with results evaluated by Baker to determine BTU content and reprocessing potential.

In addition to evaluating coal refuse for reprocessing, Baker has experience in the design of coal refuse facilities through our work in supporting active mining. Baker has conducted the geotechnical analysis related to slope stability and liner/cover soils permeability, as well as the analysis to support the staging required to construct the refuse area. Our experience includes coarse refuse piles, fine refuse (slurry) impoundments, and combined refuse areas. Baker currently is involved with the final permitting of a refuse facility for which we have conducted all the geotechnical, civil, and hydraulic analysis for an approximate 300-acre refuse facility.

NO

**C. Is your firm experienced in hydrology and hydraulics for handling mine water discharges on mining sites?**

**YES**

Description and Number of Projects:

Baker's hydrology and hydraulic staff for OSR/AML remediation design are experts in the application of hydraulic models that include HEC-1, HEC-2, HEC-RAS, HY8, TR20, TR55, HAESTADS PONDS 2, FLOWMASTER, HYDROFLOW, KYPIPE 2, CYBERNET, SEDCAD 4, UNET, and DAMBRK. Baker applies this experience to services such as stormwater management; culvert analysis; hydrologic and hydraulic studies; storm sewer design; floodplain modeling; channel design; watershed planning; energy dissipation; and waterline extension and distribution.

Expertise in hydrology and hydraulics is essential in any special reclamation/remediation design. Of the thirty (30) most recent AML projects, twenty seven (27) projects required the hydrology/hydraulics expertise of the AML/AMD design group, and 100% of this work was conducted in-house.

NO

## 12. RELEVANT EXPERIENCE.

D. Does your firm produce its own aerial photography for development of contour mapping and have your own surveying crew?

**YES** Description and Number of Projects:

Since 1983 Baker has been designing AML/AMD remediation projects for WVDEP. For all the projects to date, WVDEP provided Baker with contour maps developed from aerial photography of the project site. Baker's responsibility was to verify the topographic map by check field surveying.

Baker has a survey and photogrammetric department with a staff of 82. Baker routinely performs aerial photography and contour mapping for federal and several state agencies, as well as for private clients. Baker's Survey and Photogrammetric Department is as old as the company itself; however, Baker always brings the latest technology to the table. Fixed, mobile, and aerial LiDAR equipment are "state-of-the-art" tools that Baker can offer to add efficiencies to the field mapping process and enhance quality. **Baker is a national leader in the development and application of aerial LiDAR.** During the last five years, Baker has completed more than 50 mapping projects. Some examples are listed as follows:

**Updating Boundary/Site Improvements and Utility Survey – 23 LPOEs, North and South U.S. Borders,** US-VISIT (Photogrammetric Mapping and Surveying Services).

**Rio Grande Valley Border Fence Boundary Surveys, Cameron and Hidalgo Counties, TX.** U.S. Army Corps of Engineers, Fort Worth District (Metes and Bounds Surveys and Legal Deed Descriptions)

**Land Ports of Entry (LPOEs) Aerial Mapping Refresh, North and South U.S. Borders.** Department of Homeland Security, US-VISIT (Mapping)

**Sewer Infrastructure Location/Verification, Allegheny County, PA.** 3 Rivers Wet Weather, Inc. (GPS or Conventional Survey Data by Others)

**Open-End Contract for Surveying and Photogrammetric Mapping Services, Statewide, Pennsylvania.** Pennsylvania Department of Transportation (Through a series of nine open-end contracts, Baker has been providing surveying and mapping services to PennDOT continuously since 1986.

**Indefinite Delivery Contract A/E for Multidiscipline & Related Services for the Department of Homeland Security and Other Civil/Military Projects.** U.S. Army Corps of Engineers, Fort Worth District (Surveying and Mapping)

**Border Fence Project – PF225, Various Locations in TX, AZ, NM, CA.** U.S. Army Corps of Engineers, Fort Worth District. (Aerial Photography, Analytical Aerotriangulation, Stereo Mapping Compilation, Digital Orthophotography, Horizontal and Vertical Control Surveys, Geodetic Surveys)

**Land Ports of Entry (LPOEs) Aerial Mapping Refresh, North and South U.S. Borders.** Department of Homeland Security, US-VISIT (Aerial Photography Stereo Mapping Compilation/Topographic Mapping, Horizontal and Vertical Control Surveys, Geodetic Surveys)

**Aerial Photography, Contour Mapping, and Field Surveys** are at the core of Baker's business and expertise.

NO

## 12. RELEVANT EXPERIENCE.

E. Is your firm experienced in design of highwall elimination, grading, and material handling plans for land reclamation:

**YES** Description and Number of Projects:

Baker has been assisting state and federal agencies with abandoned mine land (AML) restoration and acid mine drainage (AMD) remediation since 1977. Baker's experience began with Operation Scarlift and now includes well over 200 AML/AMD remediation projects ranging from **strip pit and highwall regrading** subsidence control, mine sealing, reclamation of mine refuse piles, drainage improvements, revegetation, stream relocation, restoration of streams and wetlands, natural streambed design, landslide correction, and replacement of water supplies affected by abandoned mine lands to abatement of AMD problems. These services are accomplished by providing a "one-stop-shop" of professionals including engineers, geologists, surveyors, and environmental scientists to address essentially any issue that may be encountered on an AML project. These professionals combine diverse experience in:

- Mining
- Geotechnical
- Geology
- Hydraulics & Hydrology
- Groundwater
- Water Treatment
- Water Line Design & Supply
- **Grading**
- **Earthwork Balance**
- **Highwall Elimination**
- E&S Control
- Sustainable Design
- Hazardous Waste Remediation
- Surveying
- **Material Handling Plans**
- Mapping
- Field Reconnaissance
- Project Management
- Quality Control

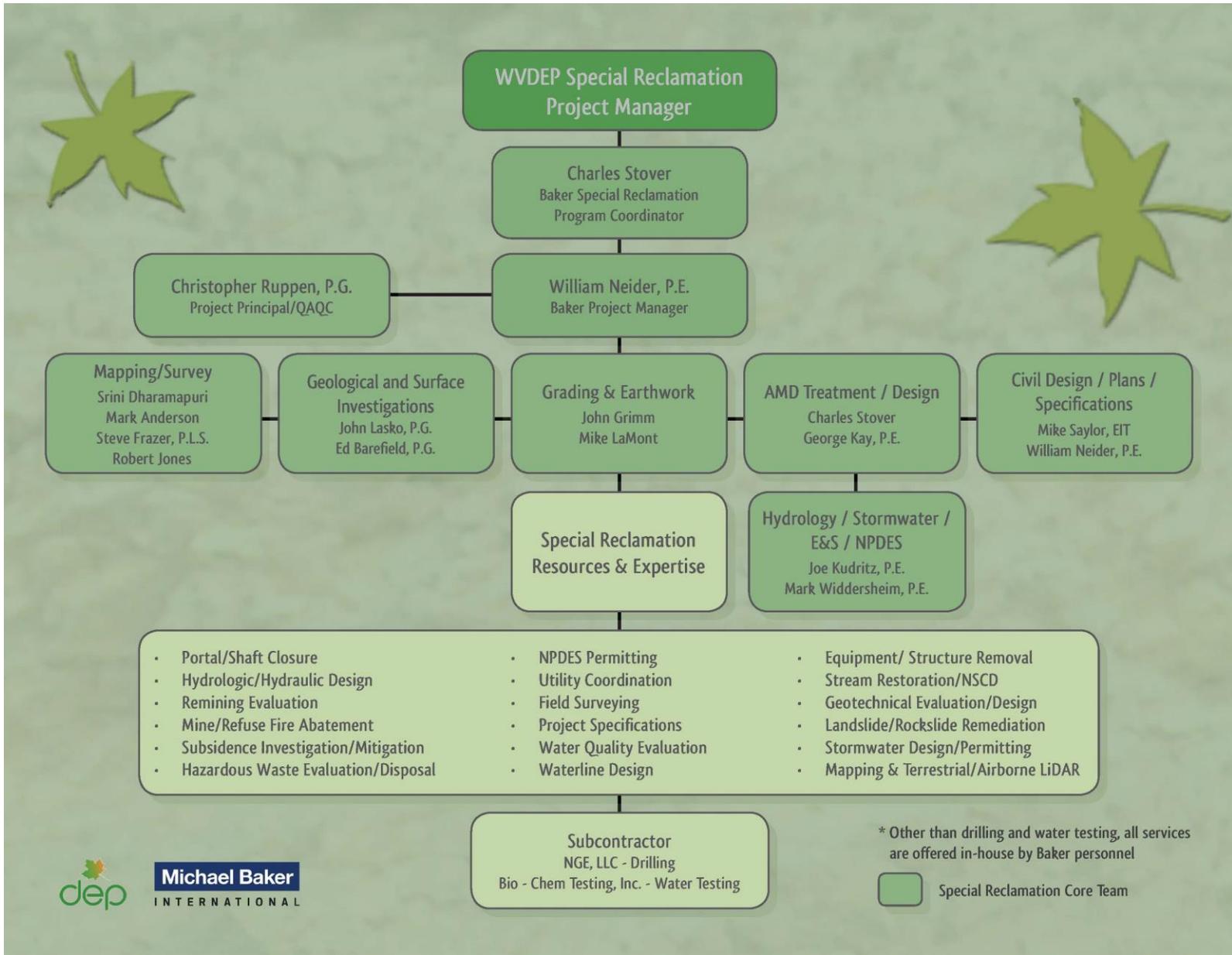
Baker has been assisting West Virginia Department of Environmental Protection with Abandoned Mine Lands Remediation/Mine Reclamation Engineering design services ever since WVDEP initiated its AML Reclamation Program in 1983. In addition to WVDEP, we have also assisted PADEP with AML reclamation and AMD remediation designs. The "OSR and related Project Experience Matrix" table provided at the end of this Consultant Qualification Questionnaire (CQQ) shows our experience on AML related projects for different state agencies, and for private clients.

NO

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN. (Furnish complete data but keep to essentials)

As depicted within Attachments B and C of this OSR Consultant Questionnaire Form, Baker can support this project with a variety and depth of technical resources as needed to successfully deliver this project. **However, the organization chart depicted on the following page identifies our core AML team that Baker will dedicate to our WVDEP AML work.** This team will be led by Mr. Charlie Stover, serving as Baker's Special Reclamation Coordinator. Charlie will be supported by Bill Neider, a registered West Virginia Professional Engineer, acting as Project Manager. The balance of our committed team includes the type of capabilities required for a typical OSR project, including a senior field investigator to help assess the site and understand the mining conditions, a geologist or civil associate to conduct subsurface investigations, a designer for grading and earthwork balance, a civil associate for stormwater/erosion & sedimentation control, and an engineer to assist with the design, plans and specifications. Other technical disciplines are available to assess items like surface water quality, hazardous materials (Past AMD treatment chemicals), cover soils, refuse stability, etc. This team will work together closely for design efficiency and can also handle multiple concurrent projects, tapping other Baker technical resources as needed to ensure project success.

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)



**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
<b>Stover, Charles D. Technical Consultant</b>	<b>YEARS OF OSR DESIGN EXPERIENCE: 39</b>	<b>YEARS OF OSR RELATED DESIGN EXPERIENCE: 39</b>

**Brief Explanation of Responsibilities**

Mr. Stover's state government career began as a Dept. of Highways Construction Inspector for two years working mostly on bridge projects, with the last project being the "Bigley Interchange Project" where three Interstate Highways converge in Charleston, W. Va. (I-77, I-79 & I-64). His next position was an Engineering Technician position with a new section of the WV Dept. of Natural Resources, Planning and Development Section's Coal Refuse and Dam Control Program. This was a "ground floor" position with the group being accumulated to regulate dams and the coal refuse disposal statewide. He advanced to Charleston District Engineer while with that group. When the new federal surface mine laws were passed in 1977 (SMCRA) this entire group was dissolved into the Reclamation Division and placed on Permit Review Teams to provide the expertise to each team for reviewing coal refuse disposal plans and dam designs for freshwater and coal slurry disposal facilities. After approximately four years of permit review, Mr. Stover accepted a position with the Abandoned Mine Lands Program (AML) in 1982 as an inspector which he held for about three years. In 1985, he accepted the position of Design Administrator for AML where he developed a process to employ various engineering consultants simultaneously to design AML projects to standards set up by AML. As his career developed he was made the Acting Chief of AML for approximately three years. The last eight years of his career was spent developing an additional office for the Special Reclamation Program to better utilize additional tax revenues that became available from a legislation action.

**Ebenezer Run Highwall #9, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Quality Control Manager. Responsibilities include quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab, and construction cost estimate. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* Quality Control Manager. Responsibilities include quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab and construction cost estimate. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Quality Control Manager. Provided quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab, and construction cost estimate.

As Reclamation Specialist Supervisor (2003-2011) in the Department of Environmental Protection-Office of Special Reclamation, Mr. Stover was responsible for:

- Setting up a new production unit to catch the program up on a backlog of projects utilizing additional tax revenues created by legislative action.
- Acquiring staffing needs (both clerical as well as technical employees (Reclamation Specialists)) to put this unit into production and begin the "catch up process."
- Responsible for ensuring that all reclamation designs were completed and submitted to the WV Purchasing Division for proper advertising. Meeting interested contractors on-site and conducting a Pre-Bid Conference explaining all aspects of the design, and showing the project as well as answering questions. Upon obtaining a successful bidder, conducted a Pre-Construction Conference to ensure that the contractor got started correctly, and answered any questions about the design package.
- Ensured all construction on OSR projects was monitored and resolved any problems that arose during the construction phase.
- Saw that mine water discharges were monitored and adjusted to be in compliance with the Clean Water Act. This usually required some adjustments to active water treatment sites that had been installed throughout the region, as well as "tweaking" some of the passive treatment sites that were built.
- Assured that the project database, as well as the water quality database, was maintained and kept up to date.

Mr. Stover was also a Design Administrator / Acting Chief (1985 – 2003) in the Dept. of Environmental Protection, Abandoned Mine Lands Program

**EDUCATION (Degree, Year, Specialization)**

AS, 1977, Commerce Accounting

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

**REGISTRATION (Type, Year, State)**

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Ruppen, Christopher A., P.G. Mining Service Manager</b>	<b>11</b>	<b>28</b>

**Brief Explanation of Responsibilities**

Mr. Ruppen is committed to client satisfaction and proactive coordination and communication with WVDEP. Based on the long running relationship between WVDEP and Baker, Mr. Ruppen conveys this approach through Baker's AML Team.

**Ebenezer Run Highwall #9, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Mining Service Manager. Assisted the project manager in obtaining the necessary resources to keep the project on schedule and in line with the client's expectations. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Baker prepared construction plans, specifications, stormwater pollution prevention plan services and check survey.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* Technical Manager. Participated in site field view, provided input into the subsurface investigation and interpretation and provided quality design reviews. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings. Baker prepared construction plans, specifications and a stormwater pollution prevention plan services.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Technical Manager. Participated in site field view, provided input into the subsurface investigation and interpretation and provided quality design reviews. Assisted with coordination and resolution of the planned gas line crossing and construction through the site. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

**Simpson Creek Highwall, Tipple, & Portals, Barbour County, West Virginia.** *West Virginia Division of Environmental Protection.* Department Manager. Responsible for quality of project managers work on the project. Baker was responsible for drilling by sub-consultants, performed research of geological data and mining maps, review of water quality data, preparation of WV Stormwater, USACE, and WVDOH permits. Prepared construction plans and specifications for the project which included erosion and sedimentation control measures, site grading, mine seals, HDPE culverts, a WVDOH box culvert crossing SR 76, grouted rip rap collection channels, soil cover placement, and revegetation.

**Foundation Mine Design/Permitting Shaft & Slope Site, Surface Facilities and Batch Weigh System Site, and RR Spur and Siding.** *Alpha Natural Resources, Inc.* Project Manager. Responsibilities included overseeing grading design of access roads, site development, and permitting requirements. Baker was responsible for developing several conceptual layouts for shaft and slope sites and rail spur with rail car loadout arrangements and evaluating them in order to optimize and finalize the locations of various surface facilities relative to the shaft and slope including overland conveyors for raw and clean coal transport with transfer stations, raw and clean coal stockpiles and slot storage and reclamation tunnel for clean coal, coal preparation plant water storage tanks, access roads to surface facilities, and batch weigh loadout for rail cars. Baker was also responsible for design of the rail spur, siding and track layout for rail car loading.

**Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania.** *Alpha Natural Resources, Inc.* Project Manager. Aided in the engineering design of the project. Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, prep plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility.

**EDUCATION (Degree, Year, Specialization)**

Master's Certificate, 2005, Project Management; B.S., 1984, Conservation of Natural Resources; B.S., 1984, Geology, Kent State University

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

American Society of Highway Engineers (ASHE); Highway Geology Symposium (HGS), National Steering Committee; Pittsburgh Geological Society (PGS), Board of Directors and Past President, Member Transportation Research Board (TRB), Materials, Engineering Geology and Subsurface Investigations

**REGISTRATION (Type, Year, State)**

Professional Geologist, 1995, PA

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Neider, William, D., P.E. Project Manager</b>	<b>3</b>	<b>16</b>

**Brief Explanation of Responsibilities**

Mr. Neider will oversee all aspects of the design, construction document preparation and permitting for site civil engineering projects. He has worked in various areas of the civil engineering practice with his primary area of experience being focused in mining permitting and reclamation projects, oil and gas permitting, land development, local transportation projects, and municipal services. He has managed projects and designed the improvements and infrastructure for commercial development, military/U.S. Government, residential subdivisions, industrial parks and sites, educational facilities, and local streets. In addition to land development experience, he has designed and directed a number of mining facilities infrastructure permitting and reclamation projects including refuse impoundments, coarse refuse piles, erosion and sedimentation control plans, and site reclamation. He has experience in numerous transportation projects varying from interstate routes to local streets, including the design of traffic circles and other traffic calming techniques. He also performed municipal engineering designs that included water distribution extensions, sewer modeling/design, drainage studies, and flood abatement designs. In all areas of his experience, he has been involved in every aspect of the design and construction document preparation, as well as management of design teams and project management. Mr. Neider has also been involved in oversight of the construction phase of projects. His experience has been with coordinating the review of project submittals, answering requests for information, and resolving construction related issues to ensure proper conformance to the design intent.

**Ebenezer Run Highwall #9, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and project design. Also responsible for construction cost estimate, stormwater pollution prevention plan, technical specifications, and NPDES permitting. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Baker prepared construction plans, specifications, stormwater pollution prevention plan services and check survey.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and design of channels and channel linings at the toe of the backfilled highwall. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings. Baker prepared construction plans, specifications and a stormwater pollution prevention plan services.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews, and design of channels and channel linings at the toe of the backfilled highwall. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. Involved with proposed gas line crossing with resolution and coordination between the gas line company and the WVDEP. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of on-site spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey, drilling by sub-consultants, and the preparation of the WV NPDES Stormwater Permit.

**Emerald No. 3 Revisions.** *Emerald Coal Resources, LP.* Senior Engineer. Responsibilities included assisting project manager with addressing DEP and MSHA comments for the Emerald Area 3 project and resubmitting package. Participated in review of comments with the client and the DEP to ensure that Baker took the correct direction in addressing comments and overseeing implementation of changes per comments. Also provided technical design of rock drain bypass system, recirculation pump system for internal drains and runoff that did not meet discharge limits and sedimentation pond erosion control sequencing plans.

**Freeport Mine - PH I - Preparation of 6 Design Build RFP Packages and 1 Site Design -Bid Build Bid Package.** *Freeport Mining.* Senior Engineer. Responsibilities included technical specifications, storm water and erosion control management review, and a constructability review of the project plan set. Also assisted in the preparation of bid packages.

**EDUCATION (Degree, Year, Specialization)**  
B.S.A.S., 2001, Civil Engineering Technology

<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> --	<b>REGISTRATION (Type, Year, State)</b> Professional Engineer, 2013, WV Professional Engineer, 2007, PA
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**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Dharmapuri, Srinivasan, Ph.D., GISP, PMP LiDAR Scientist</b>	<b>0</b>	<b>28</b>

**Brief Explanation of Responsibilities**

Dr. Dharmapuri has extensive experience in the Geospatial Industry. His experience in Project Management includes Project Management of Photogrammetry/LiDAR projects involving Flight map generation, Plan/Topo Compilation, Ortho generation and final delivery; Project Management of GIS projects involving Cadastral mapping using Best fit, COGO and hybrid methods, Zoning, Land use, Soil mapping and pin point addressing; Project setup, production flow, quality control, and client relationship management for all mapping projects; Overseeing development and implementation of various applications used for internal production on projects. Specific skills and experience include:

- Subject matter expert in Geospatial technologies (LiDAR, Remote Sensing and Photogrammetry for Geospatial Information Technology (GIT) area with a role as a primary Baker corporate point of contact for knowledge sharing and issue resolution for the GIT area.
- Project Manager for the multimillion projects on LiDAR for Elevation. The project involved collecting 8000 square miles LiDAR data and subsequent processing with project sites spread across the county.

**Airport Master Plan and Layout Plan, Upshur County Regional Airport (W22), Buckhannon, West Virginia.** *Buckhannon Upshur Airport Authority.* QA/QC. Prepared the flight plan and imagery plan for the project. Baker performed engineering and planning services to create a master plan and airport layout plan (ALP) set for the Upshur County Regional Airport (W22). The overall objective of the plan was to identify improvements necessary to comply with Federal Aviation Administration criteria and to accommodate forecasted aviation demands throughout the 20-year planning period. Baker developed master plan elements including an airport inventory, forecast of aviation activity, facility requirements, airport alternatives, an ALP set, and a capital improvement program. Baker also provided an in-depth review of the airport's runway length, mapping services, and an aeronautical survey of features on and adjacent to the airport property and within the approach paths to each runway end.

**Aerial LiDAR Elevation Data Acquisition and Processing, Washington, D.C.** *FEMA.* Project Manager. Performed the role of project management, QA/QC of the LiDAR data and packaging and delivery of final deliverables. Baker provided technical support for aerial Light Detection and Ranging (LiDAR) data acquisition and processing for the Risk Mapping, Assessment, and Planning (Risk MAP) Program. Baker's services included project management, quality assurance and quality control of the LiDAR data, and delivery of final products.

**Aerial Mapping of Alaska Highways - Parks/Elliott/Dalton Highways, Alaska.** *Confidential Client.* QA/QC. Responsible for various products that were developed for LiDAR data covering various locations along the Parks Highway between mileposts 163 and 305. Performed an accuracy assessment of LiDAR data as compared to the survey control to ensure prescribed tolerances are met. TIN files generated from the topographic data were validated with respect to survey control. Baker provided professional services to acquire aerial mapping along stretches of the Parks, Dalton, and Elliott Highways in Alaska. The state required engineering quality 2-foot topographic contours and triangular irregular network (TIN) datasets. Baker provided LiDAR acquisition with simultaneous GPS base station control; conducted initial quality control (QC), preliminary processing, and accuracy assessment of LiDAR data; generated Triangulated Irregular Network (TIN) files; performed validation to survey control; produced two-foot contour topographic data; and provided final QC and deliverable assembly.

**Joint Base General Master Plan, Joint Base-McGuire-Dix-Lakehurst, New Jersey.** *U.S. Air Force, McGuire AFB.* QA/QC. Responsible for QA/QC of LiDAR data at the spatial constrain level to post processed level. Verified the breaklines generated using LiDARgrammetry method. Baker prepared a joint-base general plan and commander's summary and developed a web-based planning system for the installation. Baker's services included project management, mapping, field investigations, land-use analysis, utility analysis, airfield infrastructure analysis, development of geographic information system (GIS) databases and mapping, and the development of a master plan and capital improvement program.

**S.R. 25 Mobile LiDAR Vertical Accuracy Validation, Jackson, Mississippi.** *Mississippi Department of Transportation.* QA/QC. Responsible for overall QA/QC of the LiDAR data. Performed the QA/QC of the final products both qualitatively and quantitatively to meet the requirements of the project.

**I-20 LiDAR Data Collection and Mapping, Jackson, Mississippi.** *Mississippi Department of Transportation.* QA/QC. Responsible for overall QA/QC of the LiDAR data. Performed the QA/QC of the final products both qualitatively and quantitatively to meet the requirements of the project.

**EDUCATION (Degree, Year, Specialization)**

Ph.D., 2006, Photogrammetry and Remote Sensing  
M. Tech., 1985, Remote Sensing; M.Sc., 1983, Physics

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

American Society for Photogrammetry and Remote Sensing (ASPRS)  
Project Management Institute (PMI)

**REGISTRATION (Type, Year, State)**

Certified GIS Professional: 2009; Certified Photogrammetrist, 2008  
Land Survey Photogrammetrist: 2010 VA; 2005 SC  
FAA Idle Level 3 Training

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Anderson, Mark William</b> <b>GIS Associate</b>	<b>0</b>	<b>9</b>
<p><b>Brief Explanation of Responsibilities</b> Mr. Anderson is a GIS Associate/LiDAR Technician in Baker's Geographic Information Technologies Department. He has a background in both GIS and LiDAR with an emphasis in regional/environmental planning.</p> <p><b>Long-Term Stormwater Comprehensive Plan Engineering Services, Charleston, West Virginia.</b> <i>City of Charleston, West Virginia.</i> LiDAR Processor. Processed Mobile LiDAR to create survey accurate plans/DTMS, DEMS, and as-builts. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and the QA/QC of the data. Baker provided engineering services to support a long-term, comprehensive, stormwater management plan by mapping the city's stormwater infrastructure. Baker's services included project management, research and data collection, data dictionary development, watershed and stream mapping, storm sewer infrastructure surveying and mapping, storm sewer pipe connectivity mapping, stormwater structure mapping, and geodatabase development.</p> <p><b>Orthophotography for Environmental Analysis, Oso Bay, Texas.</b> <i>Aerotec, LLC.</i> LiDAR Processor. Responsible for the setup of the aerial LiDAR project to produce classified LAS. Baker is providing color digital orthophotography at a resolution of 0.5 feet in support of an environmental analysis over an area of approximately 56 square miles. Services include the acquisition of new digital aerial imagery with an UltraCam X digital camera system, airborne global positioning system (GPS) and inertial measurement unit collection and processing, GPS ground control surveys and pretargeting, aerotriangulation, digital terrain model generation, and orthorectification. Orthophotography will be delivered as 5,000-foot by 5,000-foot tiles on the Texas State Plane coordinate system.</p> <p><b>Orthophotography for Corridor Routing, Yucca, Texas.</b> <i>Aerotec, LLC.</i> LiDAR Processor. Responsible for the setup of the aerial LiDAR project to produce classified LAS. Baker is providing color digital orthophotography at a one-foot resolution over an area of approximately 233 square miles to support corridor routing applications. Services include the acquisition of new digital aerial imagery with an UltraCam X digital camera system, airborne global positioning system (GPS) and inertial measurement unit collection and processing, GPS ground control surveys and pretargeting, aerotriangulation, digital terrain model generation, and orthorectification. Orthophotography will be delivered as 10,000-foot by 10,000-foot tiles on the Texas State Plane coordinate system.</p> <p><b>Surveying and Mapping Master Agreement, Statewide, Mississippi.</b> <i>Mississippi Department of Transportation.</i> LiDAR Processor. Processed Mobile LiDAR to create survey accurate plans/DTMS, DEMS, as-builts, etc. of a corridor along MDOT highways. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and QA/QC of the data. Under a master agreement for surveying, mapping, and photogrammetry services, Baker is performing surveys for a wide variety of transportation improvement projects, using state-of-the-art aerial and mobile Light Detection and Ranging (LiDAR) technology. This use of LiDAR and geographic information system (GIS) mapping allows Baker to collect roadway feature and elevation information in heavily congested areas without disruption to traffic.</p> <p><b>Surveying and Mapping Services Agreement, Worldwide.</b> <i>U.S. Army Corps of Engineers, Mobile District.</i> LiDAR Processor. Reviewing raw aerial LiDAR data delivered for processing to ensure it meets client's specifications, then setting up the data in project to be classified and edited to aid the production of contours and models of structures. Baker is providing surveying and mapping services under a five-year indefinite delivery, indefinite quantity agreement to support the district and the South Atlantic Division. Baker's services include project management, topographic data collection, aerial photography, Light Detection and Ranging data collection and analysis, geographic information system development, digital elevation model and digital terrain model development, and report preparation.</p> <p><b>Statewide Utility Relocation Design Regional Utilities Contract, Region V/Hampton Roads District, Virginia.</b> <i>Virginia Department of Transportation.</i> LiDAR Processor. Responsible for processing Mobile LiDAR to create survey accurate plans/DTMS, DEMS, and as-builts of a road corridor. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and the QA/QC of the data. Baker has been providing engineering services for the design of utility adjustment plans for VDOT for eight consecutive terms since 1992. Project assignments have included all aspects of utility relocations/adjustments, including more than 50 miles of water and sewer mains ranging in size from 4 inches to 54 inches; bridge crossings; overhead utility support structures; four pump station relocations; numerous water vault relocations, including a water booster pump station and a pressure reducing valve vault; private utility relocations/adjustments, including electrical duct banks, gas mains, steam lines, jet fuel lines and fiber optic communication systems; corrosion control analysis; railroad crossing permit applications and design and surveying.</p>		
<p><b>EDUCATION (Degree, Year, Specialization)</b> M.S., 2005, Geography/Geographic Information Systems B.A., 2003, Criminal Justice</p>		
<p><b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> --</p>	<p><b>REGISTRATION (Type, Year, State)</b> --</p>	

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<b>NAME &amp; TITLE (Last, First, Middle Int.)</b>  <b>Frazer, John S., P.L.S.</b> <b>Surveyor/Survey Party Chief</b>	<b>YEARS OF EXPERIENCE</b>	
	<b>YEARS OF OSR DESIGN EXPERIENCE:</b>  <b>0</b>	<b>YEARS OF OSR RELATED DESIGN EXPERIENCE:</b>  <b>34</b>

**Brief Explanation of Responsibilities**

**NiSource Corporation Services MSA (West Virginia, Kentucky, Pennsylvania).** Surveyor. Responsible for surveying support. Baker has provided NiSource with surveying services for many years. Under our existing MSA, surveying services have been provided for various locations throughout West Virginia, Kentucky, and Pennsylvania.

**Open-End Architectural and Engineering Services, West Virginia State University Institute, West Virginia.** Surveyor. Provided survey support. Baker provided architectural and multi-disciplined engineering services under a one-year open-end agreement to design renovations, alterations, reconstruction, or extensions of facilities. Baker's services included programming, planning, design development, construction documentation, evaluations, feasibility studies, cost estimating, and construction contract administration.

**Pipeline Surveys, Washington County, Pennsylvania.** Surveyor/Party Chief. Responsible for performing pipeline surveys. Baker was responsible for 12 pipeline surveys locating obstructions, property evidence, proposed route as indicated by land agents, woodland, utility, road and stream crossings, and tying the resultant mapping into the state plane coordinate system and vertical datum by the use of OPUS. Specific survey tasks consisted of; stake-out surveys including preliminary centerline for property owner review, final staking for construction including right-of-way, and pre-construction re-routes; downloading and processing of data for submittal to central office via email/Internet.

**Open End Contract – Survey Services, West Virginia and Ohio.** Surveyor. Performed boundary and subdivision surveys. Baker performed extensive boundary and subdivision surveys covering several plants for American Electric Power's Ohio and West Virginia locations.

<b>EDUCATION (Degree, Year, Specialization)</b>	
A.S., 1986, Civil Engineering Technology B.S., 1986, Engineering Technology	
<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b>	<b>REGISTRATION (Type, Year, State)</b>
West Virginia Society of Professional Surveyors (WVSPS), Greater Kanawha Valley Chapter	Professional Land Surveyor, 1996 WV

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Jones, Robert L. Technical Specialist</b>	<b>0</b>	<b>24</b>

**Brief Explanation of Responsibilities**  
 Mr. Jones has worked extensively in all areas of photogrammetric production including: project planning and management, workflow procedure development, aerotriangulation and digital stereo compilation. He has experience in the development of automated and semi-automated quality control methods for adherence to mapping product accuracy, completeness, and standards. Mr. Jones has been responsible for development of software to aid in map production, map quality, and workflow. He is consulted on a regular basis from all members of the team on a wide range of photogrammetry related issues, including assisting in management and adherence to PennDOT standards.

**Seven Orthophotography Sites, West Virginia.** *Dominion Transmission, Inc.* Photogrammetrist. Responsible for the orientation of 1'=200' aerial image pairs and DEM compilation for seven compressor station sites in West Virginia and Pennsylvania. Stereo model orientations were created using only airborne GPS photo center and IMU data - no ground control was used to orient the models as is typical in the standard photogrammetric approach. Compiled the DEM for each site from the stereo models which were then used by other members of our team in orthophoto production of the sites. The uncontrolled approach to this project was possible because horizontal accuracy for the orthophotos was +/- 10' and typical standards for positioning relative to the ground was not required. Baker was contracted by Dominion Transmission to deliver digital orthophotography of a number of their compressor stations in West Virginia and Pennsylvania. New color imagery was collected for the seven project areas at a flight scale of 1"=200' and scanned at a resolution of 14cm. Airborne GPS data was collected during the flight and processed to support the orthorectification process. Digital Terrain Models (DTM) were generated by photogrammetric methods for each compressor station site. Color digital orthophotography was delivered at a final resolution 0.5' and referenced to the appropriate State Plane Coordinate System. The project was completed ahead of schedule and within budget.

**Alameda Square Aerial.** *EVOQ Properties.* Photogrammetrist. Responsible for Aerial Triangulation, compilation, and data merging between CAD systems. Given new aerial photography, ground control points, and an AutoCAD file containing ground survey mapping data with both above ground and below ground features. An update of the above ground feature changes was performed using ImageStation/MicroStation. The goal was not to corrupt the existing AutoCAD file, but make changes within it to reflect the current surface in planimetrics and contours. Since translation to MicroStation of the given AutoCAD file was not possible without causing corrupted data when translating back to AutoCAD, the task now required the "surgical removal" of items which no longer existed in the old drawing, and the careful addition of new/changed items. The project was delivered with the original AutoCAD file updated and structured so that the client was able to easily see the changes. This project was out of the ordinary in many ways and required the application of many skills in both MicroStation and AutoCAD.

**ERGON - WV PLANT PHASE I.** *Ergon, Inc.* Photogrammetrist. Responsibilities included aerial triangulation of digital images. Performed a combination of automatic and manual aerial triangulation procedures to create 26 stereo models from 1'=200" color aerial photography for the purpose of updating existing 1"=20' planimetric mapping.

**Aerial LiDAR Elevation Data Acquisition and Processing, Washington, D.C.** *FEMA.* Technical Specialist. Responsible for writing Visual Basic programs to adjust hydrology. Digitized and adjusted hydrology features via airborne data, stereo models and Visual Basic programs. Baker provided technical support for aerial Light Detection and Ranging (LiDAR) data acquisition and processing for the Risk Mapping, Assessment, and Planning (Risk MAP) Program. Baker's services included project management, quality assurance and quality control of the LiDAR data, and delivery of final products.

**EDUCATION (Degree, Year, Specialization)**  
 B.S., 1989, Engineering and Mathematics  
 A.A., 1984, Physics and Math

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
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**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Lasko, John D., P.G. Senior Geologist</b>	<b>7</b>	<b>26</b>
Brief Explanation of Responsibilities		
<p>Mr. Lasko's background encompasses a variety of geotechnical projects. His experience includes project task management, test boring layout, drilling inspection, geotechnical interpretation of subsurface geology, construction inspection and related project field work.</p> <p><b>Waitman Barbe Highwall #1, Monongalia County, West Virginia.</b> <i>West Virginia Division of Environmental Protection.</i> Geologist. Assisted in the field view and determination of mining conditions. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings. Baker prepared construction plans, specifications, and stormwater pollution prevention plan services.</p> <p><b>Collier Sportmans Club Highwalls, Brooke County, West Virginia.</b> <i>West Virginia Division of Environmental Protection.</i> Geologist. Assisted in the subsurface investigation. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants, and the preparation of the WV NPDES Stormwater Permit.</p> <p><b>Site Design and Permitting for Cumberland Mine Air Shaft Number 10, Greene County, Pennsylvania.</b> <i>Alpha Natural Resources, Inc.</i> Senior Staff Consultant. Responsible for site reconnaissance to evaluate landslide susceptibility for the project site. Evaluated overall site for landslide potential, groundwater conditions, bedrock and structural geology. Evaluated proposed test boring program and recommended modifications to accommodate investigation of site conditions. Evaluated and modified testing program to accommodate site conditions. Prepared site reconnaissance plan, and provided recommendations for final subsurface investigation and testing and site design. Baker developed site design and construction documents and cost estimates, and provided permitting services for the Number 10 air intake shaft and associated site infrastructure, including a one-mile-long access road at the Cumberland Mine.</p> <p><b>S.R. 0079, Section A23, Interstate 79 Missing Ramps, Collier and Robinson Townships, Pittsburgh, Pennsylvania.</b> <i>Pennsylvania Department of Transportation, District 11-0.</i> Senior Geologist. Performed field and office coordination for preliminary and final design as geotechnical task manager. Tasks included test boring layout and laboratory testing program development, Level 2 drilling supervision, field data compilation, slope evaluation, rockfall hazard evaluation, mine treatment evaluation, water quality evaluation, and preliminary reports preparation.</p> <p><b>Allegheny Valley Train Feasibility Study, Strip District, Pittsburgh to New Kensington, Pennsylvania.</b> <i>Southwestern Pennsylvania Commission.</i> Senior Geologist. Responsible for performing site reconnaissance of two-mile section of railway to identify areas of landslide susceptibility and investigate potential for mine subsidence. Developed recommendations memorandum and cost estimate to investigate, evaluate, and repair landslides. In addition, an assessment of mine subsidence potential and subgrade evaluation was performed.</p> <p><b>Cumberland Mine No. 8 Shaft Site Design and Permitting, Waynesburg, Pennsylvania.</b> <i>Foundation Coal.</i> Senior Geologist. Responsible for performance of slope stability analysis for proposed infrastructure related to construction shaft and bleeder sites. Tasks included site reconnaissance, subsurface investigation, slope stability analysis, and design drawings assistance. Baker provided site design, permitting, and construction document preparation for the No. 8 shaft and portal facility.</p> <p><b>Freeport Mine - PH I - Preparation of 6 Design Build RFP Packages and 1 Site Design -Bid Build Bid Package.</b> <i>Freeport Mining.</i> Task Manager. Responsible for preparation of Geotechnical Data Report and geotechnical evaluation and design for earthwork for proposed mining facility.</p>		
EDUCATION (Degree, Year, Specialization)		
M.S., 1989, Earth Science and Geology, California University of Pennsylvania; B.S., 1985, Geology, Juniata College		
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)
--		Professional Geologist: 1995, PA

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
<p><b>Barefield, Edward, P.G. Geologist</b></p>	<p><b>YEARS OF OSR DESIGN EXPERIENCE:</b> <b>3</b></p>	<p><b>YEARS OF OSR RELATED DESIGN EXPERIENCE:</b> <b>9</b></p>
<p><b>Brief Explanation of Responsibilities</b></p> <p>Mr. Barefield is an engineering geologist within the geotechnical civil engineering unit at Baker. His geotechnical experience includes drilling inspection and subcontract administration/coordination, laboratory testing interpretations, and subcontract administration/coordination, subsurface geology geotechnical interpretation, detailed soil and rock slope stability analyses, structure foundation bearing capacity and settlement calculations, mine subsidence evaluations, aerial and satellite photograph interpretation, field geology reconnaissance and sampling, geotechnical literature review, drilling and laboratory testing program preparation and execution, and geotechnical report preparation and reviews.</p> <p><b>Simpson Creek Highwall, Tipple, &amp; Portals, Barbour County, West Virginia.</b> <i>West Virginia Department of Environmental Protection.</i> Geologist. Responsible for test boring and open standpipe piezometer installation inspection with office follow-up to provide boring logs for use in design of Acid Mine Drainage remediation.</p> <p><b>Wymer Portals and Davidson Highwall Abandoned Mine Complex Reclamation Design, Monongalia County, West Virginia.</b> <i>West Virginia Department of Environmental Protection.</i> Geologic Associate. Responsible for on-site geotechnical test boring inspection and oversight. Baker performed site mapping and exploratory drilling and prepared plans and specifications for the reclamation of two large abandoned mine complexes. The proposed remediation designs included the elimination of impounded mine water; installation of wet mine seals; elimination of highwalls through earthwork and site grading using available on-site refuse and spoil materials; and final site revegetation. The project plans included the addition of numerous required surface water and mine drainage structures, such as ditches, pipes, and underdrains. Bat gates were provided for several mine openings.</p> <p><b>Site Design and Permitting for Cumberland Mine Air Shaft Number 10, Greene County, Pennsylvania.</b> <i>Alpha Natural Resources, Inc.</i> Geologist. Responsible for geotechnical drilling and sampling inspection, and laboratory testing sample selection and testing schedule preparation. Responsible for test boring log preparation and geotechnical site reconnaissance and field mapping and field reconnaissance map preparation. Also responsible for interpretation of site geology and preparation of geologic sections for geotechnical design. Baker developed site design, construction documents and cost estimates and provided permitting services for the Number 10 air intake shaft and associated site infrastructure, including a one-mile-long access road, at the Cumberland Mine.</p> <p><b>Mine Permit Application Assistance, Confidential Location, West Virginia.</b> <i>Confidential Client.</i> Geologic Associate. Responsible for providing field water sampling services which included determining stream discharges in the field, water sample collection, and field chemistry measurements using field measuring apparatus. Performed field study to inventory property parcels and water resources for area to be longwall undermined.</p>		
<p><b>EDUCATION (Degree, Year, Specialization)</b>                      M.S., 2004, Engineering Geology, Kent State University                      B.S., 2002, Geology, Youngstown State University</p>		
<p><b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b>                      Association of Environmental &amp; Engineering Geologists (AEG), Allegheny-Ohio Section, ID# 7038</p>	<p><b>REGISTRATION (Type, Year, State)</b>                      Professional Geologist: 2010, PA                      PENNDOT Drilling Inspector, Level I, 2006, PA</p>	

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Grimm, John R. (JR) Senior Designer</b>	<b>3</b>	<b>27</b>

**Brief Explanation of Responsibilities**

Mr. Grimm is a designer with a background in pipelines, reclamation of abandoned mine lands including acid mine drainage abatement, earthwork, grading plans, stream channel restoration, sealing of mine portals and reclamation of coal refuse piles. While at Baker he has worked on many abandoned mine land reclamation and mine shaft site design and permitting projects. His site / civil qualifications also consist of parking lot layout and design, roadway geometry, right-of-way acquisition, drainage, storm sewer and sanitary sewer design.

**Ebenezer Run Highwall #9, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall and balancing the earthwork on site. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Baker prepared construction plans, specifications, stormwater pollution prevention plan services, NPDES permitting, and check survey.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall and balance the earthwork on site. Design responsibilities also included the layout of several mine seals including bat gates where required. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings. Baker prepared construction plans, specifications, and a stormwater pollution prevention plan services.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing high wall and balance the earthwork on site. Design responsibilities also included the layout of several mine seals including bat gates where required. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of on-site spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

**Simpson Creek Highwall, Tipton, & Portals, Barbour County, West Virginia.** *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall, balance the earthwork on site, and provide adequate drainage from the site. Baker was responsible for drilling by sub-consultants, performing research of geological data and mining maps, review of water quality data, preparation of WV Stormwater, USACE, and WVDOH permits. Prepared construction plans and specifications for the project which included erosion and sedimentation control measures, site grading, mine seals, HDPE culverts, a WVDOH box culvert crossing SR 76, grouted rip rap collection channels, soil cover placement, and revegetation.

**2007-2008 Foundation Mine Design/Permitting Shaft & Slope Site, Surface Facilities and Batch Weigh System Site, and RR Spur and Siding.** *Alpha Natural Resources, Inc.* Designer. Responsibilities included grading design of access roads, site development, and permitting requirements. Baker was responsible for developing several conceptual layouts for shaft and slope sites and rail spur with rail car loadout arrangements and evaluating them in order to optimize and finalize the locations of various surface facilities relative to the shaft and slope including overland conveyors for raw and clean coal transport with transfer stations, raw and clean coal stockpiles and slot storage and reclamation tunnel for clean coal, coal preparation plant water storage tanks, access roads to surface facilities, and batch weigh loadout for rail cars. Baker was also responsible to design the rail spur, siding and track layout for rail car loading.

**Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania.** *Alpha Natural Resources, Inc.* CADD Designer. Aided in the engineering design of the project. Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, preparation plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility

<b>EDUCATION (Degree, Year, Specialization)</b> A.S., 1984, Mechanical Engineering Technology	
<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> --	<b>REGISTRATION (Type, Year, State)</b> --

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>LaMont, Michael, J. Technical Specialist</b>	<b>17</b>	<b>29</b>

**Brief Explanation of Responsibilities**

Mr. LaMont is a designer with a background in pipelines, telecommunications, reclamation of abandoned mine lands including acid mine drainage abatement, earthwork, grading plans, stream channel restoration, sealing of mine portals and reclamation of coal refuse piles. While at Baker he has worked on many abandoned mine land reclamation and mine shaft site design and permitting projects. His site / civil qualifications also consist of parking lot layout and design, roadway geometry, right-of-way acquisition, drainage, storm sewer and sanitary sewer design. Additional telecommunications experience include fiber optic cable construction and installation drawings along highways, railroads and cross country routes, as well as stream and road crossing drawings and cross sections, and state, local, and environmental permit drawings.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* Technical Specialist. Prepared construction plans, details, and cross-section sheets and earthwork balancing for the project, and highwall backfilling grading. Provided erosion and sedimentation control measures, site regrading, mine seals, and collection and diversion ditch alignments and profiles. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal, culverts and channel, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Technical Specialist. Prepared construction plans, details, and cross-section sheets and earthwork balancing for the project, and highwall backfilling grading. Provided erosion and sedimentation control measures, site regrading, mine seals, and collection and diversion ditch alignments and profiles. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

**Maple Run Portals and Tipple, West Virginia.** *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project, which included, site grading, mine seals, collection and diversion ditches, placement of soil cover, and revegetation.

**Emoryville Mine Complex, West Virginia.** *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project which included erosion and sedimentation control measures, site regrading, mine seals, collection and diversion ditches, removal of abandoned barges and coal refuse from the North Branch of the Monongahela River, placement of soil cover, and revegetation.

**Watson Portal and Refuse Reclamation, West Virginia.** *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project which included erosion and sedimentation control measures, site regrading, mine seals, collection and diversion ditches, removal of abandoned barges and coal refuse from the North Branch of the Monongahela River, placement of soil cover, and revegetation.

**Dennison/Route 800, Ohio.** *Ohio Department of Natural Resources, Division of Mines and Reclamation.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project which included erosion and sedimentation control measures, site regrading, mine seals, collection and diversion ditches, placement of soil cover, and revegetation.

**EDUCATION (Degree, Year, Specialization)**

Certificate, 1986, Computer Aided Drafting and Design

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

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**REGISTRATION (Type, Year, State)**

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**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Kay, George, P.E. Sr. Consultant - Water Quality Engineering</b>	<b>16</b>	<b>31</b>

**Brief Explanation of Responsibilities**  
 Mr. Kay solves problems related to water quality, water and wastewater treatment, and aquatic ecosystem restoration. He has completed projects for the U.S. Coast Guard, Army, National Guard Bureau, Navy, National Park Service, and Department of Energy; twelve State government agencies; sanitary and hydropower authorities; and major representatives of the ferrous and non-ferrous metals, mining, power, petroleum, coal bed methane and shale gas, chemical, rail, air freight, insurance, site remediation, telecommunications, manufactured products, entertainment and construction industries. Areas of practice include Clean Water Act and Safe Drinking Water Act compliance assistance, design and operational troubleshooting of treatment plants, root cause analysis of myriad problems with finished waters (e.g., permit excursions, aquatic toxicity, product defects, treatment costs, corrosion, etc.), aquatic impact assessment, source water evaluations, training of engineers and treatment plant operators, and lake/lagoon management. He has served as Project Manager for systems treating sewage, various industrial wastewaters, acid mine drainage, contaminated groundwater, and potable water, built across ten States and at eight locations overseas, and has served on due diligence teams for numerous corporate acquisitions and divestitures, spill investigations, and routine EHS audits. Expertise includes compliance assistance, troubleshooting assignments, and watershed investigations completed across 42 States and at locations overseas. Prior to joining Baker, Mr. Kay was Senior Staff Engineer (Water and Wastewater) for a *Fortune 500* steel producer.

**Currie Landfill and Kelly Farm Sludge Lagoon Remediation Design, Millcreek and Fairview Townships, Pennsylvania.** *Pennsylvania Department of Environmental Protection.* Environmental Engineer. Responsible for sludge stabilization study and specifications for pore water treatment. Baker is performing a wetland investigation and delineation at the Currie Landfill site, and is developing construction drawings, technical specifications, and permit documents to construct interim remediation measures for the Currie Landfill site and the Kelly Farm sludge lagoon. Baker's services include project management; subconsultant procurement; wetland site survey, delineation, and jurisdictional determination; development of plans, specifications, and cost estimates; and preparation of permit documentation.

**Design & Permit Freeport Potable Water & Sewer System.** *Emerald Coal Resources, LP.* Environmental Engineer. Responsible for design of water intake and treatment plant for coal preparation plant, submerged Johnson screens, coagulation, DynaSand filters, and chlorination.

**GTAC 3 & 4 - Bear Creek Chemical Site, (OVER 20 sites), Butler and Armstrong Counties, Pennsylvania.** *Pennsylvania Department of Environmental Protection.* Environmental Manager. Responsible for directing sampling and whole effluent toxicity testing of seep from former organic chemical disposal site. Conducted library research on the toxicity of resorcinol and various sulfonic acids on aquatic life and prepared summary report. Directed bench scale treatability testing to stabilize a tarry chemical sludge; prepared report with results and cost estimates for remedial alternatives. Baker provided diverse environmental, engineering, and general technical assistance to the client for this project, involving up to 20 known or suspected related industrial waste disposal sites in two Pennsylvania counties. A variety of hazardous substances were present at the disposal sites and groundwater had been impacted over a large area affecting the water supply for hundreds of residents.

**Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania.** *Alpha Natural Resources, Inc..* Environmental Engineer. Responsible for preliminary design of river water intake and treatment plant. Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, prep plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility.

**Lancashire Number 15 Acid Mine Drainage Treatment Facility Design, Barr Township, Pennsylvania.** *Pennsylvania Department of Environmental Protection.* Project Manager. Responsible for directing team of chemical, environmental, structural, civil, mechanical, and electrical engineers charged with developing plans, technical specifications, and permit applications for an 11 MGD acid mine drainage treatment plant. Responded to RFIs and review submittals by Construction contractor for new AMD Treatment Plant. Baker designed an 11-million-gallon-per-day acid mine drainage treatment plant consisting of extraction wells; a pre-aeration tank; a neutralization tank; a treatment building with laboratory, office, and controls; a sludge conditioning tank; lime and polymer storage and handling systems; a terminal pond; and a sludge injection system. Baker also prepared plans, specifications, and a construction cost estimate and provided bid and construction phase services.

**EDUCATION (Degree, Year, Specialization)**  
 M.S., 1982, Civil Engineering; M.S., 1976, Environmental Health; B.S., 1975, Biological Sciences

<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> --	<b>REGISTRATION (Type, Year, State)</b> Professional Engineer, 1986, PA; 1996, Ohio
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**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Saylor, Michael J., E.I.T. Civil Associate</b>	<b>3</b>	<b>3</b>

**Brief Explanation of Responsibilities**

Mr. Saylor is a civil associate with Michael Baker Jr., Inc. He has supported erosion and sedimentation control plans such as designing collection channels, water conveyance structures, sedimentation ponds, sediment traps, and other control devices. Mr. Saylor also has experience reviewing flood plains, developing hydraulic models, performing stormwater management and conveyance calculations, and assists in NPDES Stormwater permitting. In the field he has performed inspections for drilling, as well as sediment, surface soil, and surface water sampling for Baker. Prior to coming to Baker he served as a laboratory technician testing a variety of soils and aggregates in accordance with AASHTO and ASTM standards.

**Ebenezer Run Highwall #9, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included the conceptual design of stormwater channels, sediment basins, and additional erosion and sedimentation controls. Additional responsibilities were for the coordination and inspection of drilling by sub-consultants, collecting water quality samples, and preparation of the WV NPDES Stormwater Permit. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Baker prepared construction plans, specifications, stormwater pollution prevention plan services, NPDES permitting and check survey.

**Waitman Barbe Highwall #1, Monongalia County, West Virginia.** *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included developing the conceptual design, erosion and sediment control plans, and water conveyance structures. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dump site containing non-hazardous construction debris and a suspected 11 mine openings. Baker prepared construction plans, specifications and a stormwater pollution prevention plan services.

**Collier Sportmans Club Highwalls, Brooke County, West Virginia.** *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included developing the erosion and sediment control plans, helping prepare the specifications and plans of the report, and inspecting the drilling occurring on site. Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

**EDUCATION (Degree, Year, Specialization)**

B.S., 2012, Civil Engineering

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

American Society of Civil Engineers (ASCE)

**REGISTRATION (Type, Year, State)**

Engineer-In-Training, 2012, OH

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Kudritz, Joseph Lee, P.E. Civil Engineer</b>	<b>0</b>	<b>6</b>

**Brief Explanation of Responsibilities**  
 Mr. Kudritz is a Civil Engineer with experience involving water and wastewater collection including water and wastewater hydraulic studies, sewer and force main alignments, constructing pump station operation and maintenance manuals, and cost estimation. Much of his background involves hydraulic and hydrologic studies and models, creating water elevation profiles, and working with topographic maps.

**Simpson Creek Highwall, Tipple, and Portals Reclamation, Barbour County, West Virginia.** *West Virginia Department of Environmental Protection.* Civil Associate. Performed hydrologic and hydraulic analysis for several unnamed streams. Tasks on the projects included: sizing the channels, sizing the grouted rock protection, and developing peak flow rates based on the contributing drainage area. Baker provided engineering services for the mine reclamation of the Simpson Creek Highwall, Tipple, and Portals. Baker's services included site reconnaissance; records review; surveying; subsurface investigation; water sampling and laboratory testing; engineering analysis and design; preparation of construction plans, specifications, and cost estimate; permitting; bidding-phase support; and construction monitoring.

**Freeport Mine - PH I - Preparation of 6 Design Build RFP Packages and 1 Site Design -Bid Build Bid Package.** *Freeport Mining.* Civil Associate. Responsibilities included overseeing the drainage aspects on the entire site. Specific duties included, sizing the collection channels and the required erosion protection lining, sizing the necessary sediment traps, and coordinating the channel designs with those responsible for grading the proposed channels.

**E02313 - WO 2 SR 519-138 FD.** *Pennsylvania Department of Transportation, Central Office.* Civil Associate. Responsible for preparing the post construction stormwater management report and plans to be submitted with the NPDES Permit. Also responsible for specifying the required BMP stormwater controls and designing the stormwater detention basins at the site. j

**Open End Agreement, District 12 - General Design Open End.** *Pennsylvania Department of Transportation, Central Office.* Civil Associate. Responsible for preparing the post construction stormwater management report and plans to be submitted with the NPDES Permit. Also responsible for specifying the required BMP stormwater controls and designing the stormwater detention basins at the site.

**FEMA WR 44 KDKA PGH SWMP.** *Kellogg Brown & Root.* Civil Associate. Performed all necessary calculations for the stormwater management controls used for the site. Prepared the stormwater management report for the project.

**Engineering Services for Enhancement of the Presidential Emergency Radio Transmission Facilities, Nationwide.** *U.S. Army Corps of Engineers, Omaha District.* Civil Associate. Performed all necessary calculations for the stormwater management controls used for the site. Prepared the stormwater management report for the project. Under a design-build relationship with a constructor, Baker conducted site evaluations, designed prototype structures for transmitters and generators, and prepared site designs at 35 locations to upgrade the presidential radio broadcast system. The modular facilities were designed to backup AM and FM transmissions during emergencies and withstand electromagnetic pulses, high winds, and other disasters. Baker's services included mechanical and electrical system design, generator and fuel storage system specifications, preparation of environmental surveys, adapting the prototype designs to individual site conditions, and construction management services during installation.

**1971- 2013, Municipal Engineering Services, Koppel, Pennsylvania.** *Koppel, Borough of.* Civil Associate. Responsible for determining the size and location of storm drains. From 1971 through 2013, Baker served as the municipal engineer for the borough, providing annual on-call engineering services. Baker's tasks ranged from planning and design through construction inspection to support the daily operations of the borough.

<b>EDUCATION (Degree, Year, Specialization)</b> Graduate Studies, Water Resources & Environmental Engineering B.S., 2007, Civil Engineering	
<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> Engineers Without Borders (EWB), Pittsburgh Professional Chapter	<b>REGISTRATION (Type, Year, State)</b> Professional Engineer: 2013, PA ESRI Certification in ArcGIS 9.2, 2009, PA AutoCAD Certification, 2008, PA

**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR OSR PROJECT DESIGN.** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF OSR DESIGN EXPERIENCE:	YEARS OF OSR RELATED DESIGN EXPERIENCE:
<b>Widdersheim, Mark R., P.E.</b> Chemical Engineer	<b>0</b>	<b>25</b>

**Brief Explanation of Responsibilities**

Mr. Widdersheim has been involved in environmental compliance and remediation projects for RCRA, Superfund, state-controlled, and private industrial sites. He has been a key player in the both the groundwater and wastewater treatment arenas (including sanitary systems). His responsibilities also have included engineering analyses/feasibility studies, treatability testing, process design (conceptual and detailed levels), and engineering cost estimating. Mr. Widdersheim has led and supported environmental compliance-related projects involving NPDES permitting, SPCC regulations application, stormwater pollution prevention, and emergency response planning. He is the certifying PE on SPCC and Pennsylvania PPC plans for numerous Baker clients.

**STEP Pump System Improvement, Confidential Location, Pennsylvania.** *Confidential Steel Client.* Task Manager. Evaluated AMD pumping system limitations at the STEP hazardous waste landfill. Designed a new HDPE force main for acid mine drainage transfer to wastewater treatment plant for pH adjustment. Baker evaluated the STEP Landfill Acid Mine Drainage (AMD) transfer system with respect to its ability to transfer the increased flows that had been experienced since January 2003. The system was found to be limited primarily by friction losses in a heavily-scaled four-inch force main, but otherwise sufficient to handle the increased flow. A replacement six-inch force main was designed and installed and a construction certification report prepared and submitted to PADEP.

**Dumans Treatment Plant Evaluation, Barr Township, Ebensburg, Pennsylvania.** *Pennsylvania Department of Environmental Protection.* Engineer. Responsible for study of the performance and management of an existing acid mine drainage (AMD) treatment system for PADEP, Bureau of Mines. Performed a comprehensive audit and provided operational troubleshooting for a 9.4-million-gallon-per-day acid mine drainage pumping station and wastewater treatment plant. Baker was charged with finding avenues to reduce the annual operation and maintenance cost materially for this facility, while maintaining compliance with applicable effluent limitations. Dramatic lime usage reduction was warranted to cut operation and maintenance costs. Baker performed a comprehensive audit and provided operational troubleshooting for a 9.4-million-gallon-per-day acid mine drainage pumping station and wastewater treatment plant. The project was performed wholly in-house with a multidisciplinary team of chemical, environmental, hydraulic, mining, and electrical engineers charged with finding avenues to materially reduce the annual operation and maintenance cost of this facility while maintaining compliance with applicable effluent limitations.

**2011 IE PTI Drawings, Confidential Location.** *Confidential Steel Client.* Project Manager. Prepared "as-built" process drawing relating to an ion exchange for selenium removal from leachate from a hazardous waste landfill. These were submitted to OEPA to retroactively complete the Permit-to-Install for the operation.

**Sampling and Sample Tracking, Confidential Location.** *Confidential Steel Client.* Team Member. Responsible for NPDES Part I permit renewal data collection and application completion. Designed a new HDPE force main for acid mine drainage transfer to treatment plant.

**Document Review Services for Pollution Prevention Plans, Various Locations, United States.** *Air National Guard CRTC/FMB.* Environmental Engineer. Performed third party review and commenting on draft environmental plans for various ANG bases. Baker provided third-party technical reviews of stormwater pollution prevention plans; spill prevention, control, and countermeasure plans; and oil and hazardous substance pollution control plans for 58 client installations to ensure regulatory compliance.

**STEP 2011 Monument Survey.** *Confidential Steel Client.* Project Manager. Coordinated a triennial monument and gas well survey and prepared revised map to document settlement conditions relating to a hazardous waste landfill cap system.

**Feasibility Study/Preliminary Design of Coagulation Pits, Confidential Location, West Virginia.** *Confidential Client.* Engineer. Responsible for data collection and remedial alternatives development for coagulation management and closure of existing in-ground pits. The measures were necessary to meet the requirements of the responsible party's RCRA Corrective Action Agreement. Mark's work included the redesign of the resin and latex coagulation pits that were identified as a Solid Waste Management Unit (SWMU). Meeting regulatory standards for groundwater protection, air emissions, solid waste disposal, and wastewater treatment were critical elements in the design. Baker was enlisted by a plastics manufacturer to address interim measures for the client's in-ground coagulation pits, as required by their RCRA Corrective Action agreement. The project encompassed the redesign of the resin and latex coagulation pits identified as Solid Waste Management Units (SWMUs). It was the intent of the client to place an alternative coagulation system into service. Regulatory standards for groundwater protection, MACT air emissions control standards, solid waste disposal and wastewater treatment were the driving factors in the redesign of the pits.

**EDUCATION (Degree, Year, Specialization)**

B.S., 1989, Chemical Engineering

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

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**REGISTRATION (Type, Year, State)**

Professional Engineer: 1994, PA

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE OSR DESIGN SERVICES

**HYDROLOGY**

SEDCAD4 – Storm Routing through Detention Structures, Channel Design and Riprap Sizing.  
TR20 – Project Formulation – Hydrology by SCS  
TR55 – Urban Hydrology for Small Watersheds by SCS  
HAESTADS POND2 – Storm Routing through Detention Structures  
HEC1 – Flood Hydrograph Package by U.S.A.C.O.E.  
HAESTADS QTRSS – Urban Hydrology for Watersheds  
Hydroflow Hydrographs – Storm Routing Model

**HYDRAULICS – OPEN CHANNEL AND CULVERT**

HEC RAS/ - river Analysis System/Flood Plain Analysis/Water Surface Profile  
HEC2 – Water Surface Profiles by U.S.A.C.O.E.  
HY8 – Culvert Analysis by FHWA  
FLOWMASTER – Channel and Pipeline Hydraulics by HAESTAD, Inc.  
Hydroflow Express – Culverts, Channels, Inlets, and Weir Hydraulics

**PIPELINE HYDRAULICS**

WATERCAD – Water Distribution System Modeling  
KYPEE2 – Water Distribution System Modeling  
CYBERNET – Water Distribution System Modeling  
Hydroflow Storm Sewer – Stormwater Conveyance System Modeling

**GEOTECHNICAL**

Log Draft 5  
gINT V8.3  
FB-Multi-Pier Version 4.16  
Slope/W 2007  
Seep/W 2007  
UTexas 4  
GRL WEAP  
L-Pile Versions 4, 5 or 6  
COM 624P Version 2  
GSTABL7 and STEDwin

**GEOTECHNICAL (continued)**

FIT Version 8.2  
UniSettle, Version 3  
DARwin 3.1  
Midas GTS  
GROUP Version 6  
FE Flow 5.3  
EMBANK  
SPW 911  
ProSheet  
CRSP  
DRIVEN  
PASTABL6  
RSS  
HELP  
SURFER  
SlopeInc  
PCASE 2.09.01  
CPET-IT  
FOSSA  
MSEW

**DRAFTING AND SITE DESIGN**

AutoCAD – Civil 3D for Earthwork, Survey, Quantity, Calculations, Terrain Modeling, Coordinate Geometry, Site Grading, etc.

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE OSR DESIGN SERVICES

**SURVEY EQUIPMENT**

**Survey/Global Positioning System (GPS)**

- 12 – Leica System 500 - SR 530 RTK - GPS Receiver
- 2 – Leica RS500 Geodetic Reference Station (RTK – COR Station)
- 16 – Pacific Crest ADL Vantage Pro 2-35 Watt UHF – GPS-RTK Trans/Receiver
- 2 – Airlink Raven CDMA C3210 Wireless Modems – Sprint Service, Public Random IP
- 6 – Airlink Raven CDMA C3210 Wireless Modems – Verizon Service, Static IP
- 1 – Leica Disto – Pro (Handheld EDM)
- 32 – Leica Viva GNSS dual frequency receivers
- 3 – Leica 1230 GNSS dual frequency receivers
- 5 – Trimble R8 Model 3 GNSS dual frequency receivers

**Pipe/Cable Locators**

- 3 – Radio Detection RD4000 with 3 watt transmitters
- 5 – Radio Detection RD8000 with 10 watt transmitters
- 1 – Radio Detection RD7000 with 3 watt transmitter
- 5 – Optical Ranging Inc. Spar 300 locating system integrated with the Trimble R8 receivers

**Total Stations**

- 1 – Wild TC 2000

**Tripods**

- 64

**Total Stations with Onboard Data Collection**

- 1 – Leica TCRP 1200 total station, fully robotic
- 15 – Leica TS 15P total station, fully robotic
- Optical Plummet
- 1 – Wild ZNL-16 (11164)

**Magnetic Locators**

- 2 – Chicago Steel Tape - FT - 60
- 1 – Schoenstedt
- 6 – Subsurface Instrument – ML-1

**Levels (Engineering)**

- 9 – Zeiss Ni 2 automatic level with Nedo folding rod
- 1 – Wild N-3 with Nedo folding rod
- 2 – Topcon Dini digital levels with bar code rods
- 6 – Leica NA2 automatic level with 16 ft rod

**GPS Antennas**

- 12 – Leica AT502
- 1 – Leica AT503 w/Chokering and Ray-Dome
- 1 – Leica AT504 w/Chokering and Ray-Dome
- 32 – Leica GS 15
- 5 – Trimble R8 GNSS

**Vehicle / Boats**

- 12 – 4 Wheel Drive Suburbans
- 2 – 4 Wheel Drive Jeep
- 1 – 4 Wheel Drive Pickup
- 1 – 8 Wheel Argo – Amphibious ATV
- 3 – Utility Trailers (10' and 14')
- 2 – Yamaha- Quad ATV

**Fathometer**

- 1 – Innerspace Tech Model 455 – 200 KHz 8° Transducer

**Survey Software**

- 2 – Leica GIS Data Pro Version 3.0
- 1 – Innerspace Technology Version 6.0 Data Logging with Guidance
- 17 – Leica GeoOffice Version 7.5 and 8.3
- 2 – Trimble Pathfinder Office Version 4.0
- 22 – Listech – Liscad 10.0 (COGO)
- 5 – MicroStation Version V8i and XM
- 2 – Leica SPIDER CORS Controlling Software Version 2.0
- 10 – AutoCAD Civil 3D 2011 and 2014

**Field Laptops PCs**

- 30 – HP Elite laptop PCs
- 1 Panasonic Model CF19 Tough Book

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE OSR DESIGN SERVICES

**GIS SOFTWARE**

ESRI: 4 – ARC/Info, Version 10.X  
9 – ArcView, Version 10.X (6 are Beaver licenses)  
10 – ArcEditor, Version 10.X (6 are Beaver licenses)  
1 – Spatial Analyst  
1 – 3D Analyst  
1 – ArcCOGO

AutoCAD, Version 2014 and prior versions

1 – Visual Basic, Version 6  
1 – Visual Studio 2013 Architects w/MSDN Premium  
1 – Visual Studio 2013 Developers w/MSDN Premium  
1 – Visual Studio 2013 Pro w/MSDN Premium

ARCInfo and ARCEditor are concurrent licenses  
ARCView concurrent licenses

**MOBILE LIDAR**

**Sensor**

1 – LYNX Mobile Mapper System with 2 Sensors.

**LiDAR Processing WorkStations**

3 – HP E5540 2.53 GHz, 18 GB RAM, 1.4 TB of disc space

**Servers**

1 – HP DL380, 2.1 TB of disc space,  
1 –ATMOS R610 DP Server GBE HA TITAN, 120 TB of disc space

**Software**

1 – Optech ALTM Navigation-Planner  
1 – Applanix POS PAC  
1 – Optech Dashmap  
6 – TerraSolid TerraScan  
5 – TerraSolid TerraMatch  
6 – TerraSolid TerraModeler  
1 – TerraSolid Terraphoto  
1 – TerraSolid Terraslave  
1 – GeoCue Enterprise Server

5 – GeoCue Client  
5- Geocue LiDAR CuePac  
1-Geocue LYNX MMS CuePac

**PHOTOGRAMMETRIC EQUIPMENT**

**Softcopy Stereoplotters**

1 – HP X5670 @ 2.93 GHz Processor X2 (Xeon), 18 GB RAM, 64 BIT Operating System  
1 – HP E5645 @ 2.40 GHz Processor X2 (Xeon), 24 GB RAM, 64 BIT Operating System

**Digital Orthophoto**

2 – HP Z600 E5640 @ 2.67 GHz Processor X2, 120 GB RAM, 232 GB Disc Space

**Scanner**

1 – Z/I PhotoScan – Variable Resolution Settings from 7 to 256 microns.

**Server**

1 – Compaq Proliant DL380  
Xeon 3 GHz Processor  
5.1 GB Memory  
1 Terrabyte Disc Storage

1.2 Terrabyte Network Attached Storage

**Software**

1 – MrSID, Geo Express 8.5  
1 – ImageStation Automatic Triangulation (ISAT) 6.2  
7 – IRAS – C, Version 10.1  
1 – Adobe Photo Shop 5, Version 10.0  
1 – ERDAS Imagine, Version 2010  
2 – ImageStation Base Rectifier-ISBR, Version 6.2  
3 – ImageStation DTM Collection-ISDC, Version 6.2  
3 – ImageStation Feature Collection (ISFC) 5.3  
3 – ImageStation Model Setup (SMS) 5.3  
2 – ZI Ortho Pro/Geo Media, Version 6.2  
34 – MicroStation – J & 8, Versions V8 and V81  
1 – MRF Mapping Tool Kit for GIS Linework Processing, Version 8.1  
1 – Corporate licensed Axiom Productivity Kit including File Fixer and English to Metric Conversion packages

**15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD**

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
<p><b>Ebenezer Run Highwall #9</b> Brooke County, West Virginia</p>	<p>West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands &amp; Reclamation 601 57th Street, SE Charleston, WV 25304</p>	<p>Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, check survey, erosion and sedimentation controls, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the drilling by sub-consultants, water quality sampling and the preparation of the WV NPDES Stormwater Permit.</p>	<p>\$101,413 (Fee) \$1,100,000 (Construction)</p>	<p>80%</p>
<p><b>Waitman Barbe Highwall #1</b> Monongalia County, West Virginia</p>	<p>West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands &amp; Reclamation 601 57th Street, SE Charleston, WV 25304</p>	<p>Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal, culverts and channel, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.</p>	<p>\$117,007 (Fee) \$1,085,000 (Construction)</p>	<p>95%</p>

**15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD**

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
<p><b>Emerald Refuse Area No. 3</b> Waynesburg, Pennsylvania</p>	<p>Emerald Coal Resources, LP 158 Portal Road, PO Box 1020 Waynesburg, Pa 15370</p>	<p>Prepare permit submission and construction plans for a coal refuse disposal site and slurry impoundment including E&amp;S control, diversion and collection ditches, spillways, staging, and stability analyses.</p>	<p>\$778,279 (Fee)</p>	<p>99%</p>
<p><b>Currie Landfill and Kelly Farm Sludge Lagoon Remediation Design</b> Millcreek and Fairview Townships, Pennsylvania</p>	<p>Pennsylvania Department of Environmental Protection Rachel Carson State Office Building P.O. Box 8471 400 Market Street Harrisburg, PA 17101</p>	<p>Located within an abandoned strip mine bench, Baker is performing a wetland investigation and delineation at the Currie Landfill site, and is developing construction drawings, technical specifications, and permit documents to construct interim remediation measures for the Currie Landfill site and the Kelly Farm sludge lagoon. Baker's services include project management; subconsultant procurement; wetland site survey, delineation, and jurisdictional determination; development of plans, specifications, and cost estimates; and preparation of permit documentation.</p>	<p>\$1,300,000 (Fee)</p>	<p>99%</p>

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
<b>Phase II Environmental Site Assessment of the Bear Creek Area Chemical Sites</b> Butler and Armstrong Counties, Pennsylvania	Pennsylvania Department of Environmental Protection Rachel Carson State Office Building P.O. Box 8471 400 Market Street Harrisburg, PA 17101	Baker is performing Phase II environmental site assessments (ESA) of several areas of the Bear Creek Area Chemical Site situated within an abandoned strip mine site. Baker's services include project management; mobilization and demobilization of personnel and equipment; site survey and utility coordination; field investigation; test pit excavation and soil sampling; stream, sediment, and seep water sampling; groundwater sampling; investigative-derived waste management; laboratory analysis coordination; data evaluation and validation; and report preparation.	\$806,695 (Fee)	92%
<b>National Pipeline Mapping System GIS Database Repository Services and Digital Data and Map Distribution</b> Nationwide	U.S. Department of Transportation's Research and Special Programs Administration and Office of Pipeline Safety, Washington, D.C.	Baker is maintaining the national geospatial data repository for the National Pipeline Mapping System (NPMS)	\$8,665,361 (Fee)	75%
<b>General Environmental Consulting Services and Technical Support Contract</b> Various Sites in Pennsylvania	Pennsylvania Department of Environmental Resources Harrisburg, Pennsylvania	Services include risk assessments, site investigations, remedial feasibility studies, remedial action design, construction inspection, Health & Safety, storage tank management, and industrial hygiene services	\$9,800,000 (Fee)	95%
<b>Design &amp; Construction Management Services for the Coney Island Water Pollution Control Plant Upgrade</b> New York	City of New York Dept. of Environmental Protection Elmhurst, New York	Baker, in joint venture with another firm, has been providing design, construction management and resident engineering services on a continuous basis since 1979 to upgrade the Coney Island Water Pollution Control Plant. The plant services an area of more than 22 square miles with a population of 690,500 and treats primarily domestic wastewater with some industrial and commercial wastes.	\$30,607,141 (Fee)	98%
<b>TOTAL NUMBER OF PROJECTS:</b>  8		<b>TOTAL ESTIMATED CONSTRUCTION COSTS:</b>  \$49,815,717 (Fee)		

**16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS**

PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST	
				ENTIRE PROJECT	YOUR FIRM'S RESPONSIBILITY
<b>None</b>					

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
<b>Collier Sportsman's Club Highwall</b> Brooke County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$139,821 (Fee)	2014	Yes
<b>Simpson Highwall Project,</b> Barbour County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$119,000 (Fee)	2013	Yes
<b>Prime No. 1 Mine Fetty Portal</b> Monongalia County, West Virginia	Dana Mining 308 Dents Run Road Morgantown, WV 26501	\$103,000 (Fee)	2013	No
<b>Davidson Highwall Project,</b> Preston County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$107,000 (Fee)	2010	Yes
<b>Fairmont Five Subsidence</b> Marion County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$65,659 (Fee)	2010	Yes
<b>Maybeury (Oakley) Landslide</b> McDowell County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$54,683 (Fee)	2010	Yes
<b>Wymer Portals Project,</b> Preston County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$123,000 (Fee)	2010	Yes
<b>9 County Roads, Waterline Feasibility Study</b> Preston County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$46,361 (Fee)	2009	NA (Study)

**17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD**

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
<b>Crooked Run #5 Drainage, Refuse and Portals</b> Harrison County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57 <sup>th</sup> Street, SE Charleston, WV 25304	\$82,939 (Fee)	2009	Yes
<b>Fort Gordon Mine Closure Sites,</b> Fort Gordon, Augusta, Georgia	USACE, New Orleans District P.O. Box 60267 New Orleans, LA 70160-0267	\$110,000 (Fee)	2009	Yes

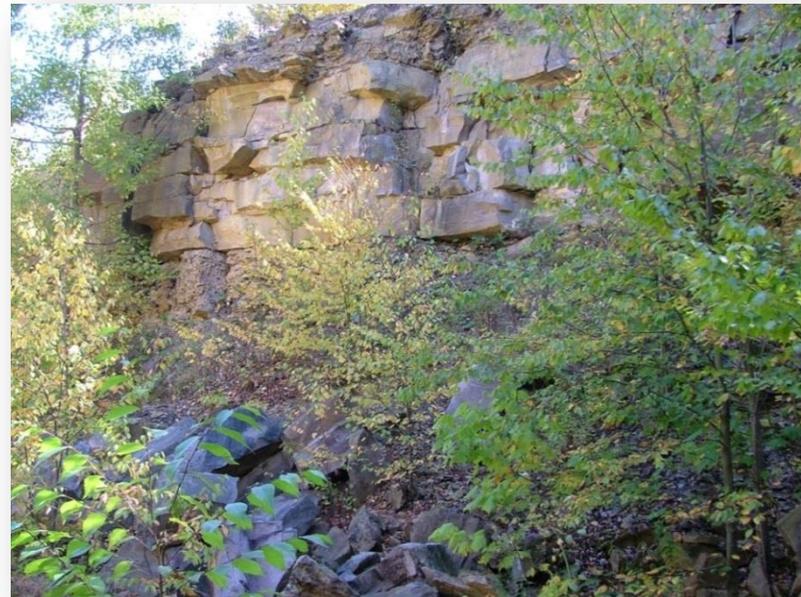
18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)					
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
General Investigation Feasibility Study, Powell River Basin Lee County, Virginia	U.S. Army Corps of Engineers, Nashville District	\$79,071 (Fee)	2011	N/A (Study)	David Miller & Associates Vienna, Virginia

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OSR CONSULTANT QUALIFICATION QUESTIONNAIRE

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Office of Special Reclamation.

Michael Baker Jr., Inc. (Baker) has been providing abandoned mine lands (AML) reclamation and acid mine drainage (AMD) remediation since the federal government first enacted legislation. Our work experience in AML/AMD started with Operation Scarlift in the 1970's, and we have been providing our engineering services in these areas to the West Virginia Department of Environmental Protection (WVDEP) since they initiated its AML Reclamation Program in 1983. Baker's AML/AMD experience has developed the skill set for Special Reclamation projects and we have supplemented this skill set by adding key individuals like Mr. Charlie Stover. Mr. Stover's experience and history with West Virginia's AML Program, and specifically The Office of Special Reclamation, will be invaluable to this project. We also provide services in this area to the Pennsylvania Department of Environmental Protection (PADEP), the Ohio Department of Natural Resources (ODNR), and the U.S. Office of Surface Mining (OSM), to name a few. Our recent experience on numerous AML reclamation and AMD remediation projects for the WVDEP, ODNR, PADEP and the U.S. Army Corps of Engineers, Nashville District, illustrates our track record for the completion of assignments on time and within budget. Through these experiences, Baker has garnered AML/AMD-specific recognition and developed long-standing business relationships through successful endeavors based on our ability to provide the following services at a level that meets environmental standards while exceeding client expectations:

- ◆ Reclamation of mine refuse piles
- ◆ Mine sealing
- ◆ Subsidence control
- ◆ Balanced earthwork and grading
- ◆ Strip pit and high wall reclamation
- ◆ Drainage conveyance and improvements
- ◆ Revegetation of acid bearing ground
- ◆ Stream relocation and natural stream channel design
- ◆ Wetland assessments and inventory
- ◆ Restoration of streams and wetlands
- ◆ Landslide identification, investigation and remediation
- ◆ Replacement of water supplies affected by mining
- ◆ Efficient passive and active AMD treatment systems



Although the projects presented in the Project Experience Matrix of Attachment "C" of the CQQ clearly shows Baker's Special Reclamation design, water system design, and related experience, they only hint at the extensive human and material resources which especially qualify our firm for this project. This AML/AMD experience directly transfers to the type of services needed for the Special Reclamation Bond Forfeiture projects. Additionally, these types of projects may require some unique technical

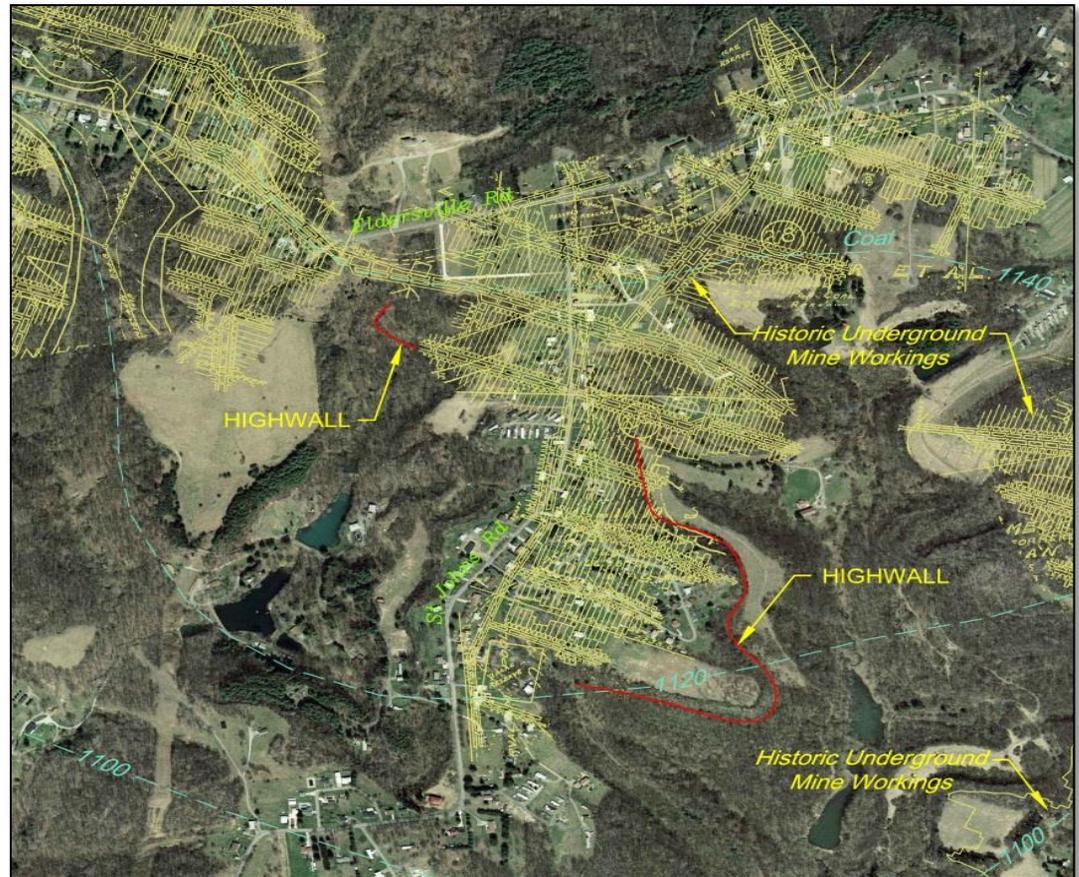
19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Office of Special Reclamation.

skills beyond a typical AML project, and as you may observe on our Organization chart included in Section 13 of this Expression of Interest, we can bring the full depth of in-house technical services to the project, as needed. This includes items like inventorying and characterizing surface water seeps and mine discharge; completing a test boring program aimed at determining spoil thickness on the west side of the project, and evaluating any highwall or mine pool conditions to assist with reclamation; designing and maintaining a treatment system for treating mine water and seepage; and LiDAR experts for securing mapping of large and altered sites, to name a few. The following narrative further describes our experience and provides insight into the special capabilities of Baker.

The civil, mining, surveying, mapping, environmental, and geotechnical services of Baker are available to immediately respond to the needs of WVDEP. Working from our Beaver, Pennsylvania office and supported by our Charleston, West Virginia office, Baker can expeditiously provide the full spectrum of services needed in water distribution system design, as well as mine reclamation and mine drainage abatement operations. Some of the more important services our firm can provide to WVDEP include:

### Field Investigation and Design Solutions

Sometimes it is about not reinventing the wheel. Our field investigations start with a literature review of any available mapping, historic mine maps, old aerial photographs, mined out area maps, landslide susceptibility maps, geologic maps, soil conservation service reports, etc. After compiling and review of available existing resources, we perform a field view of the project. Our specialized experience and technical ability has taught us that a typical Special Reclamation project is a puzzle with many pieces. Because of the history of the site, often pieces of the puzzle no longer exist. Baker's responsibility is to uncover and connect the various puzzle pieces and utilize this information to develop an efficient, constructible, cost-effective design. We take this responsibility very seriously. The adjacent image is an example of present day aerial photography, historical mine maps, structure contours and field collected data. This becomes a valuable design tool.



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### Design Systems – Active and Passive

Baker's design experience includes both active and passive treatment systems, which are based on the characterization of the AMD site as well as the flows and chemistry of the AMD. To this end, Baker provides AMD sampling to determine chemical parameters, as well as the flow measurements covering high- and low-flow periods that are most important in developing AMD abatement system. To date, **Baker has evaluated and designed 14 AMD abatement systems**, three of which are passive treatment systems that have been recently constructed and are currently in service.

Additionally, Baker has designed **seven AMD remediation projects for WVDEP** alone that included open limestone channel (OLC), anaerobic and aerobic wetlands and settling ponds, limestone sand dumping in the stream, and alkaline leach bed/anoxic limestone drains. Other Baker AMD abatement designs have been designed for USACE's Baltimore and Nashville Districts.



### Geotechnical Investigation and Analysis

In designing special reclamation projects, generally three types of soil analysis are needed. These analyses may include:

- ◆ Geotechnical analysis (bearing capacity, friction angle, etc.)
- ◆ Soil analysis for revegetation potential (pH, Acid Base Accounting, Nutrients)
- ◆ Soil analysis for hazardous materials where past dumping may have occurred.

Baker is involved in selecting and collecting the soil samples and analyzing the results of laboratory testing as required for design. Of the 30 most recent AML projects, Baker was involved in soil analysis for 20 projects.



### Hydrology and Hydraulic Analysis

Baker has used specialized regional and local hydrologic methods in our 50+ years of combined experience in the program and during our work on local and federal contracts. The team has experts in hydrologic analyses who have experience using a variety of current hydrologic methods, including HEC-1, HEC-2, HEC-RAS, HY8, TR20, TR55, HAESTADS PONDS 2, FLOWMASTER, HDYRDOFLOW, KYPIPE 2, CYBERNET, SEDCAD 4, UNET, and DAMBRK. Baker applies these models to services such as

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stormwater management, culvert analysis, hydrologic and hydraulic studies, storm sewer design, floodplain modeling, channel design, watershed planning, energy dissipation, and waterline extension and distribution. The team is also skilled in calibrating the rainfall runoff models into historical data to justify results. We realize that each watershed is different from the next and that knowledge of local characteristics can be important.

Expertise in hydrology and hydraulics is essential in any AML/AMD remediation design. **Of the 30 most recent AML/AMD projects, 27 projects needed hydrology/hydraulics expertise of the AML/AMD design group.**

### Stormwater Management

Baker applies advancements in sediment control devices to provide an environmentally low impact, cost-effective design for reclamation projects. This approach uses sediment tube traps and wattles in lieu of the conventional sedimentation ponds. These devices filter sediment laden runoff through them while also reducing hydraulic energy. They also provide a higher efficiency of pollutant removal than conventional methods and reduce the project's total disturbed area typically needed when conventional sedimentation basins are utilized. Baker grades the site such that all stormwater runoff is directed towards a channel at the toe of the backfilled highwall which doesn't allow any runoff exiting the site without the benefit of treatment. This keeps all runoff within the limits of disturbance and allows for the erosion control devices to be placed incrementally as construction progresses. Once the site is vegetated, the controls are removed without any further reclamation that typically occurs with traps and ponds. The application of these new technologies also results in lower construction cost and project duration while providing a high efficiency of pollutant removal.



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### Development of Balanced Earthwork and Grading

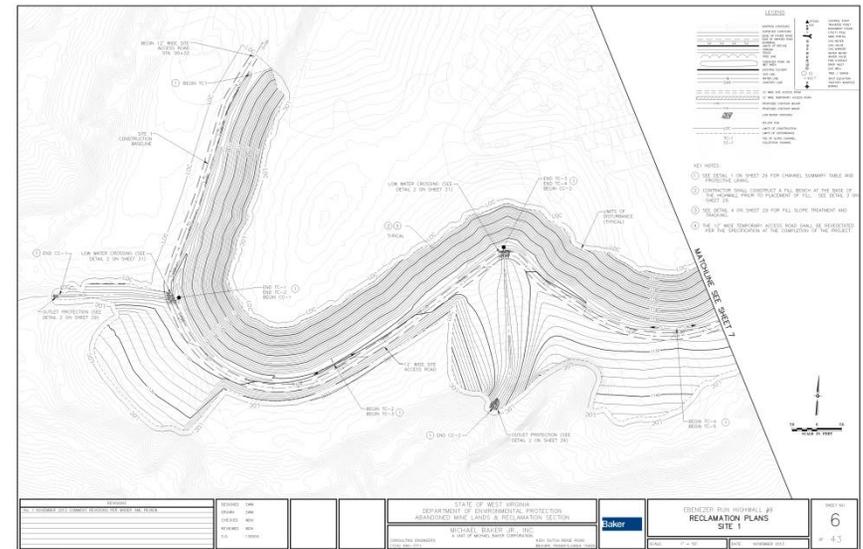
Baker typically employs AutoCAD Civil 3D for production of grading plans, profiles, details, cross sections, and balancing cut and fill volumes on AML projects. We have presented a team that includes experts in utilizing this tool for grading and evaluating excavation and fill quantities to produce a balanced AML site. AutoCAD Civil 3D is a powerful tool for abandoned mine land projects allowing the rapid evaluation of grading plan alternatives and calculation of bid item quantities. It is especially useful for projects requiring extensive backfilling and grading, such as required for projects with large refuse and gob piles, highwalls, and other abandoned surface disturbances. If required, Baker is also capable of utilizing Bentley MicroStation for development of plans and earthwork balancing.



### Preliminary Design, Final Design, and Construction Documents

Baker's expert team of licensed professional engineers are experienced in preparing preliminary design reports, construction plans, specifications, bid tabs, and cost estimates for projects including mine subsidence and grouting, portal sealing, highwall backfilling, AMD Treatment and landslide stabilization.

Baker was relied upon to write the manual for PADEP for the Permitting for Surface Facilities related to Coal Mining. A manual in which the guidelines are set for all mine permitting to be used by the Operators. This provides for a consistent and methodical process to permit the facilities and ensures the protection of the environment. This trust in Baker by PADEP to take responsibility for this important document is just a sampling of the trust our clients have always placed in Baker. It also demonstrates our knowledge of the mining processes and procedure. That understanding of how mining occurs today and historically yields valuable insight into developing solutions to deal with the resulting special reclamation projects.



### Permitting

Every design project must be permitted; however the role of permitting is often overlooked. Baker can prepare the required permitting documentation for special reclamation designs to obtain the required permits and authorizations. Baker has an experienced team of professionals who have a diverse background in environmental and regulatory permitting. Permits are prepared in-house by a team that is intimately involved with the design of the project and has working relationships with regulatory agencies. In many instances, our working relationships with the

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regulatory community have allowed us to fast-track permits or permit revisions due to unforeseen conditions. This has saved our client valuable time and funding during design and construction. Beyond the application, Baker provides technical representation to support our client's position during the permit negotiations.

### **Mobile LiDAR Capabilities**

Baker's aerial light detection and ranging (LiDAR) service provides an efficient and affordable high-definition solution to digital terrain model surface creation and planimetric feature collection. Baker owns and operates the latest in aerial LiDAR and positioning technology for outstanding productivity and survey efficiency. From a single aerial collection session, our aerial LiDAR system offers the ability to accurately capture and classify features that are important to you and the requirements of your project. With up to four range measurements, including first, second, third, and last return-point capture, you can be assured that all project data is accurately captured and available for classification

Baker LiDAR provides the ability to accurately and effectively capture point-cloud terrain data for orthophoto rectification and planimetric or topographic map compilation. Products can be delivered as bare-earth DEM files, with the option of upgrading to digital terrain models for contour generation.

Some of the functions applicable to design projects for which Baker routinely employs the LiDAR System and AutoCAD Civil 3D include:

- ◆ Contour Mapping of the Surface and Subsurface
- ◆ Facilities Layout and Site Design
- ◆ Earthwork Volume Computations and Cost Estimates
- ◆ Drafting of Plans Profiles and Cross Sections

The LiDAR System and AutoCAD Civil 3D Design software are powerful cost saving tools for abandoned mine land projects since they can evaluate numerous configurations rapidly. They are especially useful for projects requiring extensive waterline plan and profile drawings and can interface with hydraulic models such as WaterCAD for analysis and design. They are also useful for projects requiring extensive backfilling and grading, such as may be required for water tank and pump station sites, and for the grading of refuse banks and gob piles, elimination of highwalls, and reclamation of other abandoned surface disturbances.



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### Additional Services

Baker also provides the following services for Special Reclamation and water system design projects:

- ◆ Mapping and Aerial Photography
- ◆ Surveying
- ◆ Environmental Evaluations and Assessments
- ◆ Data Acquisition and Interpretation
- ◆ Construction Management

Since we can furnish all of the engineering related services required for abandoned mine lands reclamation projects “in-house”, we can work very efficiently and meet the strictest of schedules. Our efficiency is further heightened by the use of mapping systems and AutoCAD compatible design software to perform computer-assisted mapping, design and drafting.

The experience of the key project personnel includes abandoned and active mine operations. Since we continually serve many of the Country's largest coal and mineral producers as well as industrial clients and state environmental agencies, several personnel listed under Item 13 of the CQQ also have experience in all phases of mining services, from survey, mapping, exploration and reserve analysis through mine planning, permitting, design, construction management, and final closure and reclamation. Since mining and reclamation projects (and WVDEP assignments in particular) comprise a large segment of our business, we work to assure that the mining services provided meet the needs and expectations of our clients and any regulatory agencies involved. Some of the many coal producers we have served are listed below:

- ◆ Consolidation Coal Company
- ◆ Alpha Natural Resources
- ◆ Westmoreland Coal Company
- ◆ U.S. Steel Mining Co., Inc.
- ◆ Emerald Coal Resources LP
- ◆ Cumberland Coal Resources LP
- ◆ Exxon Research and Engineering Company

To further demonstrate Baker's full service capabilities and experience, a national award-winning AML project description is provided as follows:

#### ◆ ***State Funded Mine Reclamation and Pollution Abatement Projects – Kempton Refuse & AMD, West Virginia***

Michael Baker Jr., Inc. was retained by the West Virginia Department of Environmental Protection to prepare detailed design plans, and technical specifications for the Kempton Refuse & AMD project in Tucker County. The constructed project won a reclamation award and is described in a video on the WVDEP website.

The primary purpose of the Kempton Refuse & AMD project is to reclaim the remains of the pre-law underground and surface mines in the project area and divert AMD through a passive treatment system before discharging to existing streams in order to rehabilitate the watershed, and in turn the North Branch of the Potomac River.

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The project involved the reclamation of over 60 acres of exposed refuse and mine spoil, re-establishment of 4,400 LF of stream, and conveyance and treatment of numerous AMD discharges. Site reconnaissance was performed to identify mine seepage points and AMD sources, subsidence features, and potential soil borrow areas. A wetland delineation and stream assessment were performed to determine design parameters and mitigation requirements for regulatory compliance. A series of bore holes were drilled to determine underground conditions including characteristics of refuse, soil, and rock, and to determine the elevation of critical mine entries.

Plans and specifications were prepared for the reestablishment of the unnamed tributary, grading of spoil and refuse to provide positive drainage, collection of acidic seepage, sealing of mine entries, AMD conveyance and treatment, and soil covering and revegetation of refuse materials.

Specifications for revegetation and reforestation of selected areas included soil amendments, seed mixtures, tree plantings, and mulching. Stream restoration designs required to reconstruct two unnamed tributaries in the Potomac watershed employed natural design techniques including a serpentine layout with pools and riffles.

The site included numerous mine seals and collection points to abate the AMD seepage. Mine seals consisting of clay seals, aggregate material, and PVC outlet pipes were proposed, with modified entries required to meet site specific artesian conditions. Conveyance pipes and limestone lined conveyance channels were provided to transfer AMD to a treatment system consisting of an equalization pond, successive alkalinity producing system (SAPS pond), and aerobic wetland. Project construction was completed in 2009.



Kempton Refuse and Acid Mine Drainage/Abandoned Mine Lands Project in Tucker County, West Virginia. The West Virginia Department of Environmental Protection was honored by the U.S. Department of the Interior's Office of Surface Mining for its reclamation and restoration efforts on the Kempton Project. To find out more about West Virginia's Abandoned Mine Lands Program go to: <http://www.dep.wv.gov/aml/Pages/default.aspx>

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## Summary

As a large, diverse engineering firm, Baker has facilities available to properly conduct water distribution extension, abandoned mine land reclamation, and AMD remediation projects. The use of in-house capabilities facilities can speed project completion and facilitate tracking of progress. The in-house capabilities include:

- ◆ Data Processing
- ◆ Interactive Graphics and AutoCAD
- ◆ Word Processing
- ◆ Printing and Reproduction

Baker has extensive qualifications in providing engineering services for waterline and abandoned mine land projects. We offer the following response to the evaluation factors:

### 1. Bidder Experience

- ◆ Extensive experience in each area. Items 17 and 18 of the CQQ describe various projects for which we provided these services during the last five years. Projects and technical services listed under item 12 of the CQQ describe competencies typical of various projects for which we provided our services to WVDEP.
- ◆ Strong capabilities in each area. Item 13 of the CQQ lists our personnel by discipline. Our large multi-disciplinary staff is experienced in all aspects of Special Reclamation and AML reclamation; civil, environmental, mining, geotechnical and reclamation engineering applied to surface and underground coal mining; land restoration; stream and water restoration; and land use and natural resources planning. The attached "Project Experience Matrix" shows various projects performed for various clients and also shows primary participants responsible for these projects.

### 2. Qualification of Personnel with respect to background, general experience, and experience relative to the requirements of the project.

- ◆ Baker's key personnel are registered professional engineers experienced in a broad variety of water distribution and similar projects, as indicated item 13 of the CQQ.
- ◆ Our Project Professionals are veterans of many similar projects including past WVDEP projects.
- ◆ Our Mining Services Manager, Mr. Christopher Ruppen, and our proposed Project Manager for this assignment, Mr. Bill Neider, both demonstrate the desire and commitment that WVDEP deserves and expects for this assignment.
- ◆ The qualifications and experience of Mr. Charlie Stover speak for themselves. His experience in all aspects of AML work is a true benefit to the project and our team. Charlie's intimate knowledge of the Department's goals and objectives, combined with Baker's technical resources, will yield an unsurpassed team that is quality driven.

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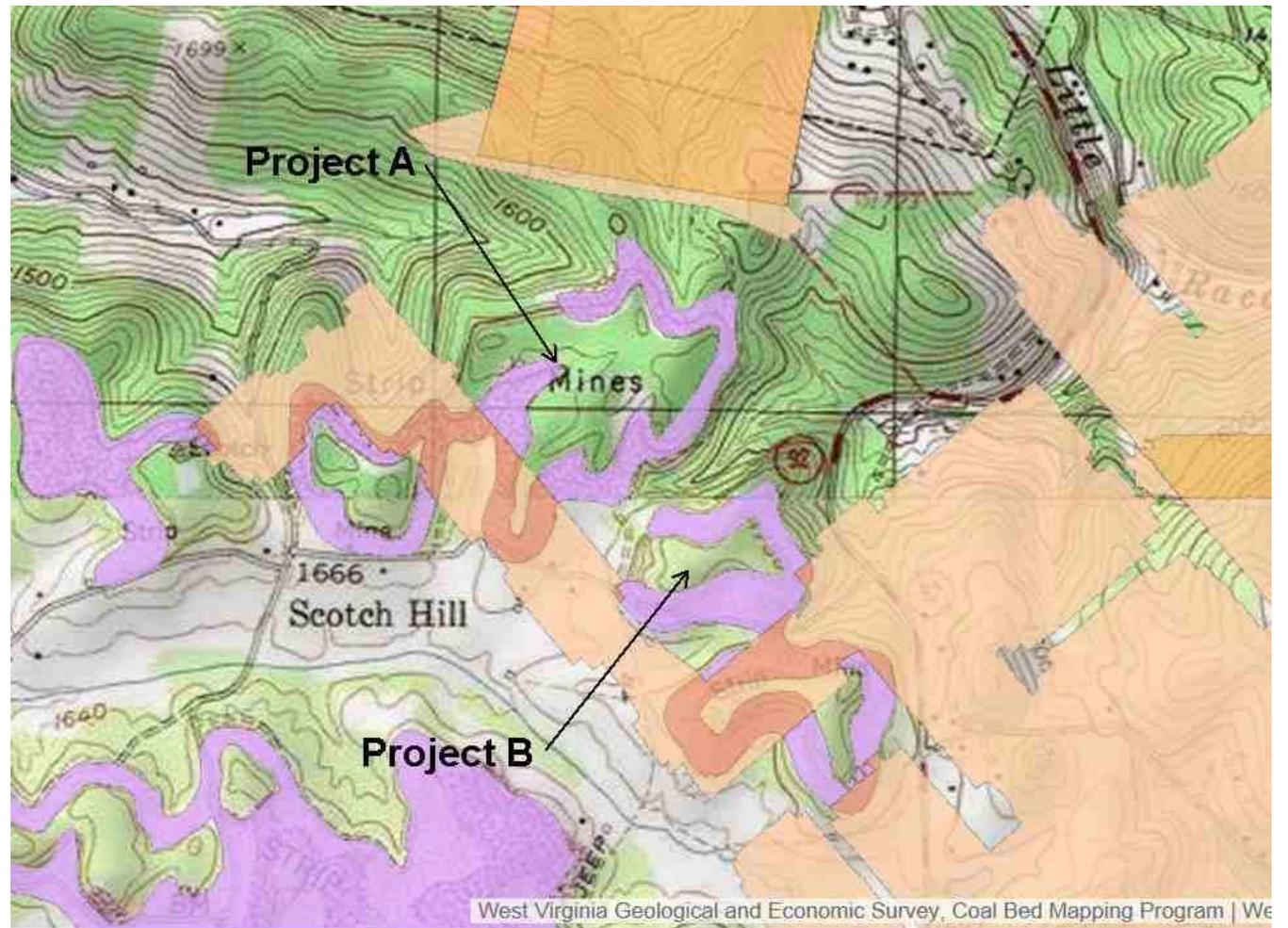
- ◆ Our commitment is demonstrated by the fact that Baker has conducted a comprehensive investigation of the project sites and has been involved with the interpretation of the mining history leading to the current day site conditions.

**3. Corporate Specialized Experience and Demonstrated Abilities**

- ◆ Baker's specialized experience with special reclamation related problems is summarized in the special reclamation and Related Projects Matrix in Appendix C. Our work has addressed the full spectrum of special reclamation projects.
- ◆ The firm has a wealth of experience on similar projects, as evidenced by projects performed for mining and mineral companies. Moreover, Baker's transportation, site development, and water resource projects in the tri-state area often address special reclamation problems.
- ◆ Baker applies advancements in sediment control devices to provide an environmentally low impact, cost-effective design for reclamation projects. This approach uses sediment tube traps and wattles in lieu of the conventional sedimentation ponds. These devices filter sediment laden runoff through them while also reducing hydraulic energy. They also provide a higher efficiency of pollutant removal than conventional methods and reduce the project's total disturbed area typically needed when conventional sedimentation basins are utilized. Baker grades the site such that all stormwater runoff is directed towards a channel at the toe of the backfilled highwall which doesn't allow any runoff exiting the site without the benefit of treatment. This keeps all runoff within the limits of disturbance and allows for the erosion control devices to be placed incrementally as construction progresses. Once the site is vegetated, the controls are removed without any further reclamation that typically occurs with traps and ponds. The application of these new technologies also results in lower construction costs and project duration while providing a high efficiency of pollutant removal.
- ◆ Our specialized experience and technical ability has taught us that a typical AML project is a puzzle with many pieces. Because of the past history of the site, often pieces of the puzzle no longer exist. Baker's responsibility is to uncover and connect the various puzzle pieces and utilize this information to develop an efficient, constructible, and cost-effective design. We take this responsibility very seriously.

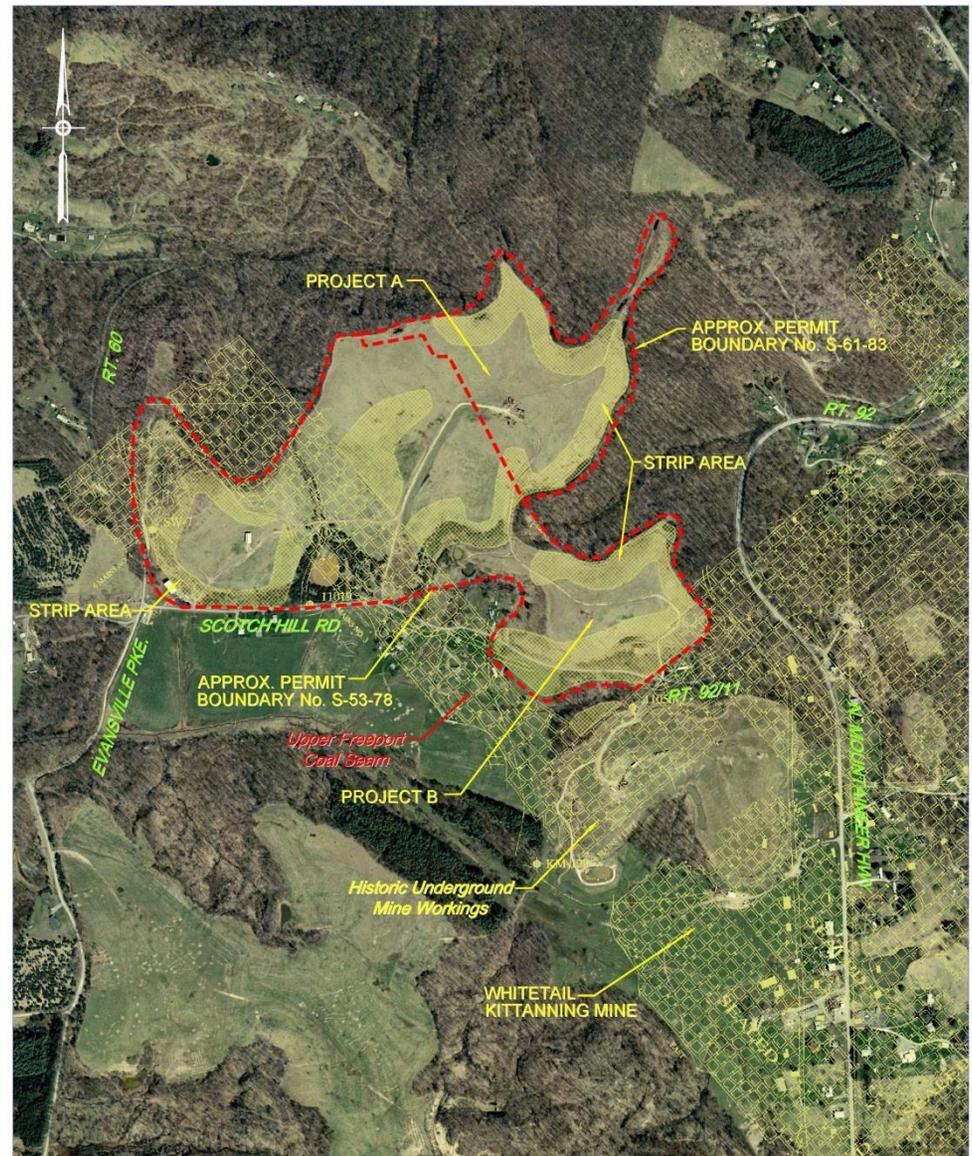
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- ◆ The image shown to the right is downloaded from the West Virginia Geologic and Economic Survey and is an example of how Baker starts to build the puzzle for any specific project. This reference begins to depict areas of surface mining (purple) which will then be compared to any identified highwalls and/or reclaimed highwalls. Areas of underground mining (tan) with headings and potential portals will be also identified and compared to any existing mine discharge pipes. These maps will also identify the coal seams that have been mined.



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- ◆ Baker routinely finds these puzzle pieces and utilizing various tools, pieces various references together to depict a quick preliminary overview of the project. The image to the right is an example of a mining site and includes the relative coal dip, historic mine maps, and aerial imagery, combined with some interpretation from our investigation. This information becomes a basis for all future work by providing a clear understanding of the history and the current disposition of the site. This tool becomes the foundation for developing a sound and efficient reclamation solution.



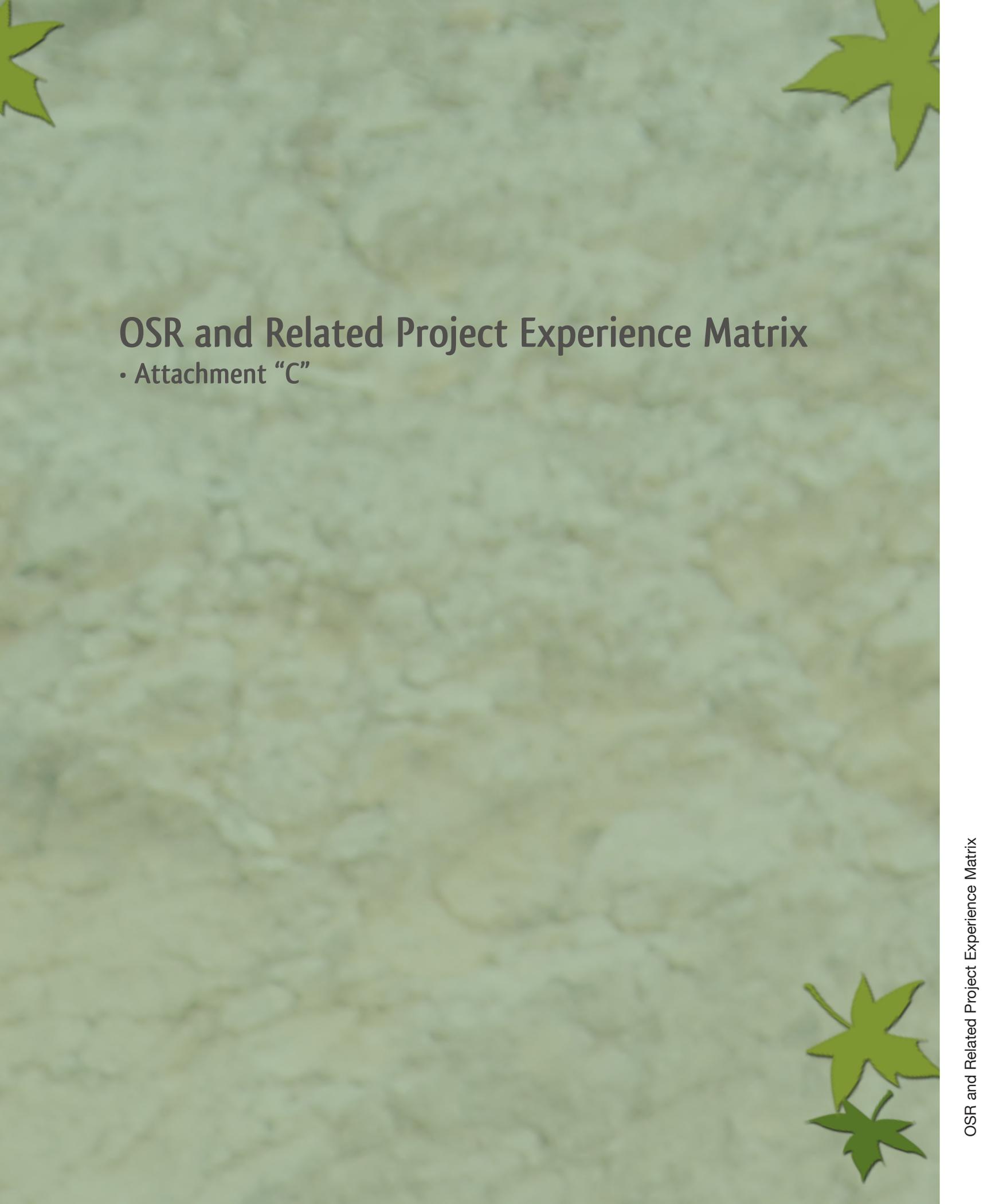
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By utilizing this reference compilation, several things will quickly become apparent:

- ◆ The type of mining that occurred on this site.
- ◆ The coal seam(s) that are involved with this site and the order they were mined in.
- ◆ Structure contours, dip, and strike of the coal.
- ◆ Areas of previous highwall reclamation.
- ◆ Locations of possible mine seals.
- ◆ Locations of mine drainage discharge ponds.
- ◆ Associated watershed(s) and tributaries to it.
- ◆ Stream classifications.
- ◆ Existing facilities remaining on site.
- ◆ Locations of existing haul and access roads.

20. THE FOREGOING IS A STATEMENT OF FACTS

Signature:  Title: Assistant Vice President Date: October 31, 2014  
Printed Name: Chad R. Davis, P.E.



# OSR and Related Project Experience Matrix

• Attachment “C”



**BAKER OSR and RELATED PROJECT EXPERIENCE MATRIX Attachment "C"**

Projects	* Exp. Basis C = Corp P = Personal	** Additional Info provided In Sections (s)	Project Experience Requirements														Primary Staff Participation / Capacity *** M = Management P = Professional																												
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal / Shaft Closure	Hydrologic / Hydraulic Design / Eval.	Remaining Evaluation	Mine / Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Eval. Mitigation / Replacement	Construction Inspection / Management	Water Treatment	Equipment / Structure Removal	Stream Restoration	Geotechnical / Stability	NPDES/Stormwater Preparation	Charles Stover - Special Reclamation Program Coord.	Christopher A. Ruppen, P.G. – Mining Service Manager	William D. Neider, P.E. – Project Manager / Lead Civil	John D. Lasko, P.G. – Geotechnical	Edward H. Barefield, P.G. – Geotechnical	John R. (JR) Grimm – Site Design	Michael J. LaMont – Site Design	Steve Savich, P.E. - Demolition	Michael J. Saylor, E.I.T. – Civil Design	Jeff Weiss	Carl Jeffreys, P.E., P.G. – Liners and Cap Cover	John A. Callahan, P.G. – Geotechnical	Joseph Kudritz, P.E. – Hydrology & Stormwater	Mark Widdersheim, P.E. – NPDES & Haz. Management	Gary Case – Hazardous Material Management	George Kay, P.E. – Water Treatment	Shrini Dharmapuri – Aerial LIDAR	Carl E. Sarver, Jr. – Geology / Mining	Mark Anderson – Mapping & LiDAR	Steve Frazer, PLS - Surveying	Robert Jones - Mapping	Scott Zang, P.E. – Refuse Disposal	Patrick Fogarty, P.E. – Civil / AML Design	Russell E. (Rusty) Hall, P.E., P.S. – Principal			
			M & P	M & P	P & M	P	P	P	P	P	P	P	P	P	P	P	P	M & P	P	M & P	P	P	M & P	P & M	P	P	P	M & P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	M		
Emoryville Mine Complex AML/AMD (WVDEP)	C&P		*	*	*	*				*	*		*		*								*																						
Fairmont Five Subsidence (WVDEP)	C&P	17				*			*	*		*													*																	*	*		
Flemington Portals & Drainage No. 2 AML/AMD (WVDEP)	C&P	17	*	*	*	*				*		*			*								*				*		*																
Fort Gordon, Georgia (USACE)	C&P	17	*			*				*			*					*																											
Hardy Coal Bond Forfeiture (ODNR)	C&P	17	*			*				*		*			*								*																						
Jed-Havaco Reclamation (WVDEP)	C&P		*			*		*		*		*	*	*	*										*																*				
Kempton Refuse & AMD (WVDEP)	C&P	17	*		*	*				*	*	*	*	*	*									*																					
Lindentree AMD Remediation (ODNR)	C&P		*		*	*				*	*	*	*	*	*								*																						
Maybeury (Oakley) Landslide (WVDEP)	C&P	17	*	*	*	*				*	*	*	*	*	*								*				*														*	*			
Maple Run Portals & AMD (WVDEP)	C&P		*	*	*	*			*	*	*	*	*	*	*								*																						
Marmet, East Bank, Cabin Creek, Mill Hollow Complex Portals & Drainage (WVDEP)	C&P	17	*	*	*	*				*	*	*	*	*	*								*				*														*	*			
McArthur Subsidence (WVDEP)	C&P			*		*			*	*	*	*	*	*	*				*				*																						
Mineral-Zoar Road AMD Reclamation (ODNR)	C&P	17		*	*	*			*	*	*	*	*	*	*								*																						
Mount Eaton Subsidence Stabilization (ODNR)	C&P	17				*			*	*	*	*	*	*	*			*				*			*	*														*					

